

# MOTOR AGE

Vol. V No. 9

MARCH 3, 1904

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## KNOX 1904

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ARE BUILT TO GO THE ROUTE  
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They Have The Only High Power Engine Successfully Cooled by Air

From thousands of satisfied users has come the verdict that for speed, endurance, comfort and style the "Knox" leads the world. Six styles Passenger Cars and six styles Commercial Cars to choose from.

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**KNOX AUTOMOBILE CO., \* Springfield, Mass.**

Member Association Licensed Automobile Manufacturers

# MOTOR AGE

VOL. V. NO. 9

MARCH 3, 1904

\$2.00 Per Year

## CLEVELAND'S

CLEVELAND, O., March 1—The darkest day in the recollection of the oldest residents, accompanied by a drizzling rain that thoroughly soaked every car as it was brought to the armory, ushered in the second Cleveland automobile show, which was formally opened last evening at Gray's armory. But these conditions did not keep away the cream of Cleveland's society. President E. Shriver Reese, of the Cleveland Automobile Club, did the unveiling act at 7:30 and within an hour the turnstile had registered over 3,500 admissions.

The armory was simply jammed, the crowd easily exceeding that of any evening in the show last year. The club aimed to make the opening evening a society event and well it succeeded. Nearly every one was in evening dress and aside from the interesting features at the various exhibits, it was a show worth going to see, for the best orchestra in the city had been engaged for the week and the decorations exceed anything ever attempted for a similar event in Cleveland.

A huge ball of incandescents is suspended in the center and draped from this are numerous streamers of red, white and blue lamps. Nearly every stand has an electric sign, where there were only two or three last year, while the decorations of the various stands are more elaborate than before.

D. J. Post, the Veeder man, who claims to have attended every bicycle and automobile show held in this country, says it is the most enthusiastic and the most elaborate local show he has ever attended. It is certainly a much more representative show than that of last year. The White, Peerless, Baker and Konigslow companies, that declined to participate last year, are out in full force this time, displaying through their local branches or agents, while the out-of-town makers are also more numerous. There are more sundries people and more trade papers. Only in the tire game has there been a falling off, due to the decision



## GOOD SHOW

of the tire makers' association not to exhibit at any local shows. The list of local dealers, and manufacturers as well, shows several changes indicating that the automobile business is not in all cases a gold mine; two dealers and three manufacturers having withdrawn from the local field.

But, of course, while the show is of tremendous interest to local people who did not attend the big national shows, it is not really in the same class with those shows—nor should it be expected to be. Only three cars that were not shown at the big exhibits are shown here. They are the products of makers in this territory. In the material line there are more novelties. One of these is a model of a rotary gas engine; another is a burner for steam machines, which it is claimed will utilize the cheapest grade of kerosene without odor, smoke or carbon deposit and with greater efficiency than gasoline. Then there is a new electrically operated speed indicator, and a preparation for increasing the efficiency of gasoline; also a mechanical device for the same purpose. Of the novelties that have been shown elsewhere, one of the most interesting is the Edison storage battery, which has been so widely heralded as a revolutionizer. Walter Baker shows a car with a battery of this kind and he is kept busy detailing his experiences with the battery, which he does without compunction.

Famous racing cars are among the centers of attraction. At the Baker exhibit there is the Torpedo Kid, the fastest car of its kind in the world, while at the Winton stand is the eight-cylinder Bullet II, still the fastest car in competition, if not the world's mile straightaway record holder. The Packard people show the Gray Wolf, which holds the mile voiture legere record, and has probably passed through more wrecks than any other racer.

The automobile boat game has been launched here, and there is no doubt that it will take well. The little boats are not excessively ex-



pensive and as Cleveland has a good harbor and plenty of lake room, there is no reason why they should not sell well. The two lines work in well together and at least one prominent dealer intends to push both this season.

A summary of the various exhibits at the show follows:

**AUTOMOBILE GARAGE & REPAIR Co., Cleveland**—This company is agent for the Packard, Autocar and Waverley electric. The exhibit consists of a Packard four-cylinder chassis, Packard four-cylinder, 24-horsepower standard touring car, a two-cylinder 12-horsepower Autocar with tonneau, a 10-horsepower, two-cylinder Autocar runabout, two 12-horsepower chassis, a Waverley electric station wagon, and a Waverley physician's road wagon. The center of attention is the Packard Gray Wolf. The company is state agent for the Brown patent dust guard, the Sta-rite spark plug, Mixoline metal polish and a non-fluid oil gun. These and other sundries are shown.

**AUTOMOBILE TOP & SUPPLY Co., Cleveland**—The company is agent for the Sandusky Automobile Co. and shows the Courier runabout, a 7-horsepower, single-cylinder car which sells for \$800. The company has recently been formed by W. G. Harding and G. A. Bottgei, who expect to open a garage in the near future.

**ACME MOTOR CAR & REPAIR Co., Cleveland**—The company manufactures several lines of specialties. The Acme muffler is light, simple and inexpensive and is claimed to be practically without back pressure. The Acme tonneau dust shield is attached to the rear of the tonneau by a brass frame and rolls up when not in use. The Tell-tale cylinder detector is an electrical device used in detecting defects in a cylinder when two or more cylinders are operated in parallel. Dyno, a chemical, is used in gasoline and it is claimed will add to the efficiency of the fuel. Polar freezing compound is also shown. The last two articles are manufactured by the Auto-Accessories Co., of Cleveland, for which the Acme company is general sales agent.

**BADGER BRASS MFG. Co., Kenosha, Wis.**—The exhibit consists of an extensive line of Solar oil and gas lamps.

**BREW & HATCHER Co., Cleveland**—This company exhibited a sample car at Chicago, but a somewhat different model is now being manufactured. It has two cylinders, horizontally opposed and placed in front across the frame. The cylinders are 4½ by 5¼ inches and are suspended from an arched sub-frame. The transmission is of the sliding gear type, giving three speeds forward and a reverse. The power is transmitted through a shaft provided with universal joints and driving the rear axle through bevel gears. The carburetor is of the float feed type with automatic air valves. All valves are mechanically operated. There is a governor which controls both spark and mixture, giving all ranges of speed. The Mercedes type of bonnet is used and the water supply for the entire cooling system is contained in the radiators and cylinder jackets. The flow of water through the radiators is continuous through eight courses of tubing, four wide. Water is forced through the radiating system by a positively driven pump operated from the secondary shaft of the speed gears. The car has an 82-inch wheel base. It sells at \$1,750. The company is prepared to sell complete cars or motors and in addition has a single-cylinder motor. It also shows a large line of parts manufactured to the order of other manufacturers. A specialty is made of such work.

**CUSHNOL & PHILLIPS AUTOMOBILE Co., Cleveland**—This company has recently been organized and has the agency for the Peerless, Knox, Northern and National electric lines. It has started work on a fine garage in the east end. In the Peerless line it shows a 24-horsepower limousine model, a 24-horsepower four-cylinder touring car and a 24-horsepower chassis. In the Knox line is a two-cylinder, 18-horsepower chassis, a 24-horsepower chassis, an 8-horsepower runabout, and an 8-horsepower single-cylinder doctor's stanhope. In the Northern line are shown a 15-horsepower touring car and a runabout. In the National line is a National stanhope. For demonstrations the company has four Peerless touring cars, three Knox cars, including a delivery wagon, one National and one Northern.

**CONTINENTAL CAOUTCHOUC Co., New York**—Emil Grossman, manager, shows numerous samples of Continental tires, Continental lamps, horns, goggles, spark plugs, coils and other European goods which he is successfully introducing in this country. Several large drawings of prominent French cars decorate the stand.

**ELECTRIC SPEED INDICATOR Co., Cleveland**—An electrically operated speed indicator combined with a clock has just been brought out and a working model is shown.

**FREDONIA MFG. Co., Youngstown, O.**—This company's new cars were late in arriving and were not in place for the opening.

**GRAY & DAVIS, Amesbury, Mass.**—They show a complete line of gas and oil lamps.

**PAUL GAETH, Cleveland**—Mr. Gaeth is a local manufacturer who has built up a good trade in this section. His cars have never before been exhibited. He shows a single-cylinder car and a double-cylinder car, both fitted with tonneaus and tops. The cylinders in both machines are horizontal, with head and exhaust valve chambers cast in one piece and water jacketed. Circulation is obtained by the thermo-syphon system. The bonnet is practically square and the radiator is of the honeycomb style. Transmission is of the planetary type running in oil, giving two speeds forward and reverse. The forward speeds are obtained by the use of a single lever and the reverse by a pedal. The high speed clutch locks the complete transmission and applies power direct from engine shaft to rear axle through a heavy chain. The mixture from the carburetor is controlled through a foot button connected to the throttle. The spark accelerator is located at the side. Piston and connecting rod bearings are lubricated by a sight feed oiler. The steering mechanism is of the Brown-Lipe pattern.

**GENEVA AUTOMOBILE MFG. Co., Geneva, O.**—This company displays through its Cleveland branch store, two models of the Geneva steam tonneau, with 10-horsepower, directly connected engine and flash boiler, listing at \$1,750; and a four-passenger, convertible 10-horsepower car with fire tube boiler, listing at \$1,250.

**W.M. HJORTH & Co., Jamestown, N. Y.**—A convenient combination wrench is shown. The tool is light and well made and combines a nut wrench, pipe wrench, wire cutter, tack puller and screw driver.

**HUSSEY DROP FORGE & MFG. Co., Cleveland**—An extensive line of forged and machined automobile parts is shown. It includes steering wheels, radiators, grease cups, funnels, circulating pumps, oil pumps, pipe strainers, lamp brackets, etc. One of the latest novelties is a weldless axle made from a single piece of steel with either drop or straight center, and made

from nickel steel if desired. In producing the nickel steel axle the company has designed a special furnace, fed by a specially designed stoker to procure the extreme temperature required to work this hard material. Another novelty is a simple lamp bracket designed for either side, dash or tail lamps. For use with electric lamps, it is made hollow, so that the wiring may be carried through it. Another new device is the Lehman universal joint of the ball type, claimed to be one of the lightest and strongest universal joints on the market.

**INTERSTATE FOUNDRY Co., Cleveland**—This company is producing special castings for a number of leading automobile makers and is equipped to take care of the most intricate work. It shows numerous parts, among them cylinders and pistons for the Winton company in rough and finished condition, also pieces for several other concerns. An automatic computing scale made by a Toledo concern is used to demonstrate the ability to do difficult casting.

**JOSEPH W. JONES, New York**—At a stand in front of the main entrance is shown the Jones speedometer, a mechanical device operating through a set of gears and a flexible shaft with a speed indicator on the dash.

**OTTO KONIGSLOW, Cleveland**—A most interesting novelty is shown at this stand—a working model of a rotary type of gas engine. Mr. Konigsow claims that the rotary gas engine is soon to become recognized as a practical motor. The cylinder casing is circular in form and at equidistant points on the casing are four valves, two inlet and two exhaust valves. Revolving upon a shaft are two blades which operate similarly to a ring pump. The motor operates at a high rate of speed, but it is claimed that it can be practically controlled and made adaptable for automobile work. Mr. Konigsow is experimenting in this direction. The Ottocar runabout exhibited by Mr. Konigsow has a single-cylinder, horizontal motor 4½ by 6 inches and planetary transmission with two speeds forward and reverse. It is fitted with tonneau and a square bonnet. An extensive line of stamped parts are also shown, including steering wheels, valve gaskets, spark and throttle controls, artillery hub parts, cups, cones, circulating pumps, bearings and other parts. The exhibit is in charge of L. J. Mueller, who is sales manager for the Konigsow line, and Mr. Mueller also displays a number of articles which he handles on his own account. Among these are the Indian motorcycle, Splitdorf coils, Herz ignitors and stationary and automobile motors built by the E. H. Clay Co., of Chagrin Falls, O.

**MATTHEWS BOAT Co., Basecom, O.**—Ralph R. Owen, of Cleveland, has the state agency for the motor launches manufactured by this company and is introducing them with decided success. Within the past few days he has sold no less than ten launches and the prospects are he will take many orders during the week. Boats are furnished either with or without motors. Two varieties are exhibited: A 16-foot fishing launch equipped with a 1-horsepower motor giving a speed of 6 miles an hour and having a seating capacity of seven passengers is offered complete for \$175. A 21-foot launch fitted with canopy top and holding from 18 to 20 people sells at \$330 without power and \$500 with a 5-horsepower motor giving a speed of 9 miles an hour. At the lake front Mr. Owen displays a handsome launch which was built for his own use. It is 32 feet over all, has a 15-horsepower engine and a cabin with

sleeping compartments, the cabin finished in solid mahogany. The boat cost \$2,600 and is one of the finest and fastest of its size on Lake Erie.

H. S. MOORE, Cleveland—Mr. Moore is manufacturing the Star automobile, having bought out the business and equipment of the defunct Star Automobile Co. The Star has a single-cylinder motor 5 by 6 inches, developing 8½ horsepower at 1,000 revolutions. It is placed well in front with the head forward, so that the valves and parts are accessible by removing the floor in front of the seat. The motor is hung very low from a channel iron frame. The Champion planetary transmission is used and a single lever gives the high speed by a forward movement, and the low speed by a backward movement. The reverse is obtained through a pedal. Power is transmitted to the rear axle by a ½-inch roller chain. The throttle and mixture are controlled by a swinging pedal which will remain in any position desired. The spark is advanced or retarded by a small lever at the side of the seat. The carburetor is of the float feed type. The car has an 80-inch wheel base, 30-inch wheels with 3-inch tires in front and 3½-inch in rear, and weighs 1,350 pounds. The body is built practically to order. For two passengers it sells at \$850; with tonneau, \$950; delivery wagon top, \$950; canopy top, \$125 extra. Mr. Moore is agent in northern Ohio for the Orient buckboard and shows a sample of this little machine.

R. H. MAGOON, Cleveland—Mr. Magoon is agent for the Pope-Toledo and shows a single model of the handsome 14-horsepower, \$2,000 car. Sectional parts of the motor and transmission are shown.

NATIONAL CARBON Co., Cleveland—The exhibit consists of a line of Columbia dry cells and Auto cells for sparking purposes; also spark plugs.

OHIO MOTOR CAR CO., Cleveland—The stand is at the front of the hall and the line of cars on exhibition is the largest there. The company has just moved into a new garage which is undoubtedly one of the finest in the country and visitors who desire to do so are taken to it, open house being held this week. In large cars the company features the Stearns. Two samples of the two-cylinder, 24-horsepower car are shown, also a highly finished chassis. One of the cars is finished in white and fitted with canopy top and side baskets. In the Columbia line are the following: four-cylinder, gasoline touring car, two-cylinder runabout, electric Victoria, electric brougham, electric landau and an electric runabout. These were shown at the big shows and the larger electric in particular are attracting much favorable comment. In the Cadillac line there is a model B, a model B chassis, two-cylinder machines of 8½-horsepower, and a model A and surrey, both with 6½-horsepower motors. Numerous parts of Stearns, Cadillacs and Columbia cars are shown. For demonstration purposes the company has two cars of each make in constant attendance. The company is general sales agent for Auto-cleaner, a new compound manufactured by the Specialty Chemical Co., of Cleveland. It is claimed the preparation will not injure brass, enamel or leather, and that it will instantly remove dirt, oil or grease. It is also claimed that a body treated with the preparation will not collect dust. Samples are distributed. The Ohio company is also sales agent for a new volt meter manufactured by the Page Volt-

meter Co., of Cleveland, a device the size of a watch, used in determining the voltage in a storage battery. It is made in two sizes.

OHIO OLDSMOBILE Co., Cleveland—This company is state agent for the Olds line. The most interesting model is a new \$650 runabout which is shown for the first time at any exhibition. It has a longer and larger body and longer wheel base than the standard runabout and has a curved nose. The cylinder measures 5 by 6 inches, develops 7-horsepower and the use of packing is dispensed with. Another interesting feature is a standard runabout provided with glass sides, with the car in operation, enabling spectators to see the workings of all parts. A standard \$650 runabout, a touring runabout, a railway inspection car and a tonneau touring car complete the exhibit.

PRICE BROS. CARRIAGE Co., Cleveland—This is a strikingly effective stand in which are arranged all the models built by the Baker Motor Vehicle Co., for which it is local agent. In the center of the group of highly finished black cars is the little Torpedo Kid in pure white. The standard Baker models include the stanhope, imperial, Newport, runabout and the new four-passenger surrey. Also a special runabout fitted with the Edison storage battery which Mr. Baker has used widely in experimental work. This battery is attracting widespread attention and Mr. Baker's opinions on the much discussed subject are interesting. He claims that the ampere-hour capacity of this battery under favorable conditions is no greater than with the ordinary lead battery, but that under severe conditions such as fighting a head wind, or climbing a heavy grade the discharge is not nearly so rapid as in the case of the lead battery, hence for average work where all kinds of conditions are apt to be met with, the Edison battery gives a better mileage than other batteries. An imperial runabout is mounted on a roller stand to show the ease of control. Another Baker product is a motor generator or rotary converter set, for transforming alternating current to direct. The Baker company has sold a number of these outfits to users of electric vehicles. In addition to its advantages as a charging outfit, the outfit is valuable for exercising a battery in winter. This is accomplished by weakening the motor field through a rheostat and inverting the usual process, the current passing from the storage battery through the motor, generator and meter, onto the line again. The recording meter is of course inverted and the current used in the exercising process amounts to only what is consumed through friction losses in the machines.

SEYMOUR BROS., Cleveland—These gentlemen have just entered the retail field and will sell the Michigan runabout, the unique little machine which has the reputation of being the smallest automobile on the market.

TWENTIETH CENTURY MFG. Co., New York—This is a novel exhibit of the well known Twentieth Century lamps; a hundred or more of various types and sizes being mounted on a revolving Ferris wheel. At night all the lamps are lighted. The 20th Century mica spark plug, oilers and horns complete the exhibit.

VEEDER MFG. Co., Hartford, Conn.—The layout that has been duplicated at practically every automobile and bicycle show ever held; cyclometers, odometers and tachometers, in profusion, many of them in operation. In cases are shown samples demonstrating the various kinds of attachments required for the leading makes

of cars to avoid the necessity of special fittings.

E. R. THOMAS MOTOR Co., Buffalo, N. Y.—A three-cylinder Thomas touring car is shown. The Thomas people have no agent here but expect to secure one during the week for this car which proved greatly popular at the New York and Chicago shows.

WARNER AUTOMOBILE & MFG. Co., Cleveland—This company has just brought out a new burner using kerosene as fuel, which can be adapted to steam automobiles, brazing furnaces, plumbers' torches, and other devices. The generator for automobiles has not yet been completed for exhibition purposes, but the device is shown in operation on the other articles mentioned. The burner is simple, consisting of a coil of tubing passing around a hot tube. The kerosene enters one end of the brass tube under pressure and in passing around the hot tube it finally enters one end of the tube as a gas. It is claimed that the burner will use the cheapest grade of kerosene, that it is entirely odorless, will not smoke or accumulate carbon and that the heat produced is greater than that of alcohol or gasoline. It is also claimed that with a furnace of this kind it is possible to braze cast iron and that it will melt copper or nickel.

WHITE SEWING MACHINE Co., Cleveland—The White company exhibits through the White garage. Three cars are shown; a standard steam tonneau without top, a standard tonneau with top and side baskets and a limousine car. The cars are beautifully finished in two colors and attract much favorable comment. The first hour Manager Waite reported a sale of a limousine car. Above the exhibit is a miniature White car, outlined with incandescents. White carnations are presented to all ladies.

T. C. WHITCOMB AUTOMOBILE Co., Cleveland—This company is another newcomer in the field. It has northern Ohio for the Rambler, Ford and Royal cars. W. N. Booth & Co., sub-agents for these lines, with a new store in the east end, exhibit with the Whitcomb company. The Royal exhibit is really a space by itself with people from the local factory in attendance. It is handsomely decorated in royal purple and three machines are shown, a two-cylinder touring car and a four-cylinder car and chassis. In the Rambler line are shown the 8-horsepower runabout, single-cylinder tonneau, and 16-horsepower, double-cylinder touring car. There is also shown a Rambler motor cycle. In the Ford line is an 8-horsepower light runabout and an 8-horsepower light touring car.

WINTON MOTOR CARRIAGE Co., Cleveland—Through its retail branch the Winton company has an attractive exhibit in the center of the hall. The arrangement is plain but rich. A polished brass railing surrounds the stand. Four Winton cars are shown, one standard Winton touring car in maroon finish, one in canary finish with a top, a chassis standing over a large mirror, and Bullet II, which stands in the center of the space and is constantly surrounded by admiring spectators. The canary finished car is new this year and is one of the most striking cars on exhibition.

WESTERN AUTOMOBILE Co., Cleveland—This is also a newcomer. Distinct from the Ohio Oldsmobile Co., but under the same management, the company is handling the Franklin air-cooled car, and shows a four-cylinder runabout, and a four-cylinder car with tonneau. A 24-horsepower tonneau car is used for demonstration purposes.

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## TWO KINDS OF DANGER

**I**N THE 6 months ending June, 1903, 1,771 persons were killed and 22,972 persons were injured on railroads in the United States. This means that the railroads of the country kill or wound 134 persons a day.

There are 41,225 locomotives in the United States according to the latest available interstate commerce reports. Then there is an average of over one death or injury per year for each locomotive in use. Suppose each automobilist in the country killed or wounded one person a year!

In July, August and September of 1903, 1,025 persons were killed and 14,162 persons injured on railroads in the United States. This is at the rate of twelve persons killed a day, or 166 persons killed and wounded each day on railroads.

The marked increase in injuries and fatalities is explained by a newspaper by the fact that such accidents are now much more fully reported than formerly.

It costs a life or a personal injury for every 19,758 tons of merchandise and for every 10,697 persons carried on railroads. This is the price of ordinary transportation by railroads. The net earnings of the railways are over 600 million dollars a year.

Railway accidents are to be deplored. It is to be deplored that railway trains thunder into large cities on grade lines crossing street after street that teems with children.

Many of the accidents on railroads might have been avoided by better general precautions for safety. Such precautions will soon be made necessary. Accidents will still happen and people will as now shudder and forget them.

The cost of the world's traffic be what it may the traffic must go on—unless it is by automobile.

The automobile is new. The man who is used to the locomotive's thunder and thinks himself a lucky fool, if after standing in the middle of a railway track jumps off just in time to miss death, is not used to the automobile's sputter and hears in it nothing but injury and death.

His forefathers heard the same disaster in the shrill screech of the little funny locomotives that started railroading.

There is nothing else in what is sometimes

called the unfriendly attitude of the public toward the automobile than the comparative strangeness of the new medium of travel.

People who get used to twelve deaths a day by railroads must sooner or later recognize the fact that an occasional deplorable accident in automobiling does not make of automobiling a menace to the human race. It would be well indeed if there were no accidents in anything, but it is useless to consider such a futile hope.

Accidents will always be. Automobiling is not proud of its accidents. It stands as a means of travel which will eventually reduce the accidental deaths and injuries of traffic far below their present ratio in comparison to the total of work accomplished.

But just now when the public and the press howl and rave about its accidents it only points out that its accidents are not comparatively as great as the accidents of other means of transportation.

Forty thousand locomotives running on steel railroads in private highways kill at the rate of twelve a day.

Were the forty thousand automobiles of the country to kill at the rate of twelve a day every automobile factory in the country would be closed!

## AUTOMOBILE SHOWS

**B**Y THE first of April there will have been held in Europe and the United States about thirty automobile shows, of which twenty-three will have been in prominent cities.

Altogether from 600,000 to 1,000,000 persons will have viewed the automobiles for 1904. Consider that this would be equivalent to the same number of persons visiting one salesroom during a period of 30 weeks and one has a good idea of the prominence of automobile shows in the automobile industry.

But the prominence of shows as a factor of the industry is not so great a lesson as the prominence in the commercial world of a young industry which supports so many shows.

Ten years ago last summer at the world's fair at Chicago there were two automobiles on exhibition. Since then has grown an industry whose exhibitions of a winter attract a million persons.

Spread over Europe and America automobile shows have become the meccas of the automobilists and prospective automobilists of different lands and different sections. Their extent has crowded their places of holding.

The industry has become mighty even were the show the only index of its strength.

The infant has jumped from its cradle.

## WONDERFUL FORESIGHT!

**T**HE Motor World in thinking over the way in which MOTOR AGE has always been able to get out big show issues with considerable rapidity than the Motor World, comes to the consoling conclusion that it must report the shows before they happen.

The eastern paper is slow. It should have gone on and consoled itself with the fact that last July MOTOR AGE was in the postoffice with the cable story of the Gordon Bennett cup race 2 days ahead of any other paper, because, by its wonderful "necromancy," it guessed that Jénatzy would win the big event.

Also, it might have drawn the conclusion that by good guessing as to who would be able to complete the journey to Pittsburg, MOTOR AGE was the only paper to print the story of the finish of the endurance last October in the

issue of the week of the finish of that test.

Next summer MOTOR AGE will be in the mails with the story of the Gordon Bennett race before any one other paper; and next winter it will be in Madison Square garden with the complete story of the New York show before any other paper.

There is no guessing or necromancy about it. MOTOR AGE has the best mechanical facilities, uses the telegraph, has a large staff and knows how to do it.

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Science has come forth as a supporter of the motor car as against the horse, by making the statement that the horse is seriously deteriorating the health of the cities. Dr. Louis Parkes, an eminent English authority on sanitation, says the evidences of the horse's presence on the streets, when dried and pulverized and blown about by the wind, are a fruitful cause of nasal catarrh, follicular tonsilitis, conjunctivitis—pneumonia, and other diseases of the respiratory organs. To the fact that the last year has been a healthful one is attributed by Dr. Parkes to the unusual wet weather, which prevented this material from becoming sufficiently dried and pulverized to produce its deadly effects. The universal adoption of the automobile is suggested by the doctor as a remedy for this unpleasant state of affairs.

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Some of the motorists of Sweden are endeavoring to arrange an international motor carnival on ice in Sweden in 1905. This country is regarded as being especially favorable, as there are three automobile clubs, and there are many lakes and rivers which would make ideal speed tracks, and which remain frozen solid for several months. Lake Malar, at Stockholm, is being favorably considered for a carnival, and an event of this kind there would attract motorists from all parts of Europe and perhaps some from America. Unique automobilizing seems to be the correct thing.

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One Lamberjack, of France, who would like to be known as an automobile racing man, was a witness of the record breaking races on the Florida beach course a few weeks ago. While there it was generally agreed that he was a very agreeable, modest sort of person. Now that he is back safely in his own dear Paris he has developed the habit of being interviewed on the subject of why he thinks the records made were bogus ones. It is strange what effect the climate will have on a man's moral courage.

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The Buffalo Automobile Club is going to build a club house with its share of the profits of the automobile show to be held in Buffalo next week. The club may get some good advice on how to make a club house a popular resort of the members by inquiring at 243 Michigan boulevard, Chicago.

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In whose interests are the eastern newspaper men who are so assiduously trying to amalgamate the American Automobile Association and the American Motor League working?

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Country automobilizing is only a few weeks off. Rural storekeepers are wondering how much they will dare charge for gasoline this summer.

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Nineteen hundred and five will be a side-door tonneau year.

## SPRING BRINGS MOTOR CAR RACE TALK

New York, Feb. 28—Under instructions from the race committee of the A. C. A. Secretary Butler will within the next fortnight and perhaps this week make a visit to Virginia Beach with a view of inspecting the course with regard to its availability for a speed and long distance test of the machines that have been entered for the American team in the international cup race. Alexander Fischer, American agent of the Martinis, has placed a high speed car at Mr. Butler's disposal for the inspection and test. It is probable that A. R. Pardington, chairman of the racing board, will also be of the party with the idea of an inspection of his own to settle the question of the fitness of the course for race meets, for which sanction is likely to be asked. The candidates for the American team are also to be invited to go along. Actual speed tests will also probably be made by F. A. La Roche with his Darracq Blue Streak and L. P. Mooers with one of the Peerless flyers. Harlan W. Whipple may possibly try out his new Baltimore-built flyer.

There seems to have been a clash of some sort among the factions that made up the Virginia East Coast Automobile Association; said to be between some of the Norfolk automobile clubmen on the one hand and the Virginia Beach hotel people and land owners on the other. Accordingly yesterday there was a meeting held in this city at which a new organization was formed to conduct the meets. It will be known as the Virginia Beach Automobile Club and has for its officers: Alfred N. Chandler, Philadelphia, president; Sylvanus Stokes, Norfolk, Va., first vice-president; Thomas Y. Leith, Richmond, Va., second vice-president; Lee Straus, New York, secretary-treasurer; C. E.

## GOSSIP OF

Percy Owen, president of the New York Automobile Trade Association, says he proposes to call the attention of members to the state law which gives a livery stable owner the right, after keeping a horse or carriage without payment for 2 months, to notify the owner that he has a lien on it for storage charges. Mr. Owen very justly thinks that there should be a similar law enacted for the benefit of garage keepers to enable them to collect for unpaid storage, supplies and repairs and will have the association's counsel draw such a bill for presentation at Albany.

"As you have seen for yourself the last half hour," said E. B. Jackson, manager of the John Wanamaker garage, "there is a rush for the Ford cars, on which there is immediate delivery. We expect great things from the Premiers. The air-cooled models will begin to arrive within 2 weeks, but we do not expect the big 40-horsepower water-cooled cars before 6 weeks. We are now selling Type VIII Searchmonts, which have been fitted with Trebert engines, at \$2,200. Mr. Wanamaker expects to erect before the season closes a big garage on upper Broadway."

Alexander Fischer expects to receive the first of the Martinis, which are made in Switzerland under Rochet-Schneider license and whose exclusive agency for this country he has secured, early next week.

Harry Fosdick, manager of the Winton branch in Boston, ran over last week for a call

Lent, Philadelphia; H. M. Reinhard, Richmond, and C. H. Consoloo, Norfolk, directors.

A study of the tides caused a change of the date originally proposed from May 17 to May 10. This will admit of 5 days of racing between 10 a. m. and 2 p. m. It is proposed to have four open and several match races each day and to follow the race meet with a carnival made up of an outdoor show, gymkhana, a floral parade and speed and brake tests of touring cars.

It has also been suggested that a 350-mile race be promoted in April—the beach is over 70 miles in length—to try out the candidates for the American team. If this test be acceptable to the A. C. A. racing committee it is proposed to run a preliminary open tournament in connection with it.

W. J. Morgan, manager of the Ormond meet, has returned from Florida. "The Senator" is proudly displaying a \$300 gold timing watch with chain presented him by the Florida East Coast Automobile Association in recognition of his services. On his arrival home he said he found awaiting him letters from Charles Jarrott and S. F. Edge. Both announced their intention of coming over this season for record trials on Ormond Beach and possible participation in some of the track meets.

H. S. Harkness is reported to have announced his intention of building another racer

with the idea of a try for the world's mile record on Ormond beach. The young millionaire is quoted as saying that the new car will have no extra parts, the differential being cut out of the running gear, and there being no springs. As already announced in an interview with a MOTOR AGE man, Mr. Harkness proposes to take the racer he built for last year's American team competition to Ormond on the occasion of this year's elimination trials for a mile trial. If the trials be changed to Virginia Beach he will probably make the attempt there instead.

The new automobile law of New York contains a provision allowing the supervisors of any county to grant permission for a speed trial on the roads within their jurisdiction. Under this Chairman Pardington, of the racing board, hopes to be able to get a permit for a race somewhere in the state to decide the ownership of the cup W. K. Vanderbilt, Jr., has offered the A. C. A. for a 300-mile race. The fact that Nassau county in the face of its strong anti-automobile prejudices gave permission for the A. C. A. to run its elimination trials at an early morning hour last spring and the fact that the tests were made without accident or complaint give encouragement that permission will not be difficult to secure, if not in Nassau county then in some other county. It is believed that hotel keepers, merchants and others in some county can be convinced of the advantages of holding such a race.

A. J. Picard, who officiated as starter at Ormond and many of the track circuit meets last year, announces that business demands on him as sales manager of the American Darracq Automobile Co. will prevent his holding the flag the coming season.

## METROPOLITAN

on Percy Owen and to attend to some matters in connection with the Boston show.

M. L. Bridgman, a veteran cycle dealer, is to enter the automobile business. He has leased a two-story brown stone stable at 20 West Sixtieth street, and has fitted it up as a garage. At present he will confine himself to storage, but contemplates later taking the agency for one or more cars.

A. J. Picard, who had charge of the Darracq exhibit at the Chicago and Detroit shows, is pleased with the results attained and the agencies he placed in both cities. "I succeeded in making the Darracq well known in a district which is sure to afford a fine market for imported cars. I incidentally managed to introduce the Darracqs to several southern buyers as well."

George B. Adams, who has taken the New York agency for the Apperson, has established headquarters at 132 West Forty-ninth street. He has been kept busy demonstrating whenever the abnormally strenuous winter weather permitted.

As a result of its Mr. Duerr's visit to the Chicago show the Duerr-Ward Co. has added the Royal Tourist and the Mitchell to its Aeme line. The Royal Tourists are exhibited next week and the Mitchells a few days later.

A phenomenally long list of orders booked for Pierce and Peerless cars makes Manager Wridgway, of the Banker Bros. Co., one of the most cheerful men along automobile row.

John Wanamaker created somewhat of a stir on Friday by his liberal advertisement of his taking on the Premiers for the medium priced trade and of the coming of the 40-horsepower Premier for the swell demand. The latter, he says, will have mechanical inlet valves, honeycomb cooler, pressed steel frame, 36 by 3½-inch tires and 102-inch wheel base.

## GARAGES

They will seat seven, five in the tonneau, and will sell for \$4,000. Mr. Wanamaker still refers to his Fifty-seventh street station as a temporary garage, indicating that the intention of building a new and more elaborate one originally announced by W. D. Gash has not been abandoned.

Two importations of F. A. La Roche in the sundry lines are attracting attention. One is a spark plug, called the oleo, which is said to be much favored by French drivers, and the other is a speedometer, known as an auto-controller. The latter is the size of a watch and is attached to the front axle.

Homan & Schultz, the Rambler agents, are much better off than most of the dealers in Americans in the matter of 1904 models on hand.

Mr. Hollander, of Hollander & Tangeman, sailed Wednesday for Turin, Italy, to visit the F. I. A. T. factory with the purpose of hurrying shipments of F. I. A. T. automobiles and motos for speed boats.

Zero weather, including a big snowstorm, gave post-show retail business another setback in New York last week. Offers of fur coats, leather jackets and masks proved insufficient to induce possible buyers to go out for a demonstration ride. There was not so very much trade loss though, for most of the importers pretty well cleaned out their stock on hand at the show and the dealers in Americans are still complaining of delays in the receipt of the 1904 models.

## MOTOR CAR REPAIRING



MOTOR AGE

One of the largest automobile repair shops in Chicago is located on the west side, on Harrison street near Oakley boulevard. This is the Hagmann & Hammerly Automobile Station, and it has grown from a little shop covering about 2,500 square feet to its present proportions of nearly 15,000 square feet.

The Hagmann & Hammerly plant has a frontage of 50 feet on Harrison street and is 170 feet deep. The front part of the building is two stories in height, 50 by 90 feet, while the rear part has three floors, each 50 by 50 feet.

The first floor, facing Harrison street, is used as a storage room, with the offices of the firm to the right of the entrance. In the rear is the wash room on one side with a large room which is used for storage in summer. The engine room has a 12-horsepower gas engine which runs a dynamo with a capacity of eighty lights.

The second floor in front is used as a machine shop, as is also the rear room of the same floor. A large elevator carries cars to the second floor. In the rear shop there are two lathes, three drill presses and other machinery necessary for making automobile repairs. The firm carries a large assortment of patterns, so that parts of almost any automobile can be duplicated, in many cases before the part could be obtained from the factory. The tool room has a complete assortment of taps, dies, reamers and drills from No. 60 to 2 inches in diameter. The third floor is used for storage and as an auxiliary repair shop.

The Marr is the only car for which the firm has the agency, but second-hand cars of various makes are offered for sale. An air compressor and an automatic muffler cut-off, for which patents are pending, will shortly be put on the market by this firm.

In discussing the subject of repairing automobiles, Mr. Hammerly said: "A repair man who has not been thoroughly schooled and fitted for this special line of work places his customers in a position of uncertainty. After having paid for adjustments of repairs the customer finds that little has been done and no benefit is derived. No boys or incompetent workmen should be allowed to fit or adjust

the delicate parts of a gasoline system, for no business will succeed with continued complaints of incompetency. Customers demand quick service, and only a strict supervision of all de-



MOTOR AGE

THE H. &amp; H. STATION

parts and close attention to each customer's wants will keep the confidence necessary to success in such a business as this.

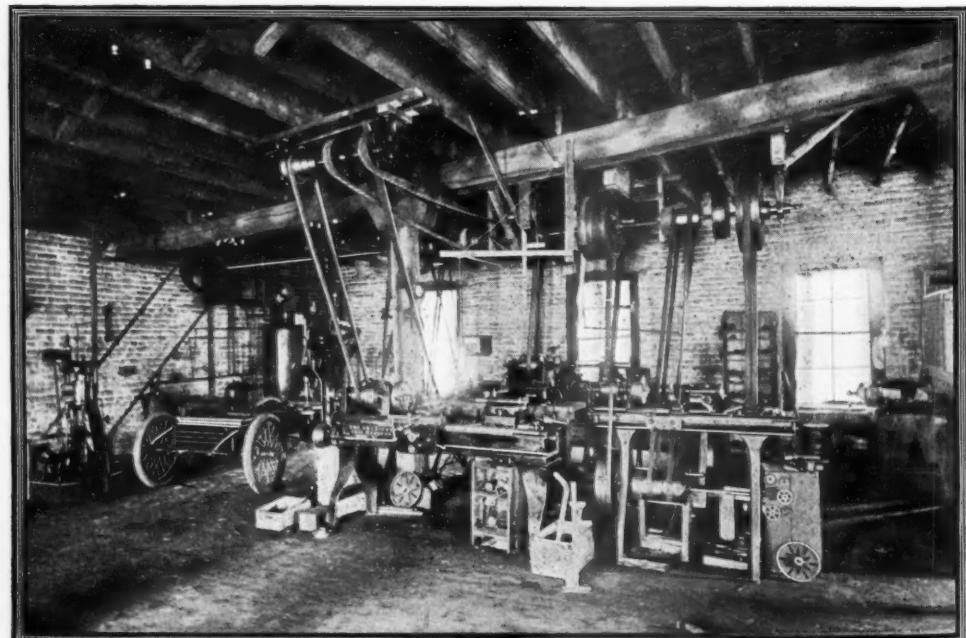
"The matter of supplying extra parts for emergency cases is not within the power of the repair man to control, except on rush order or by a good financial standing with the supply house. The public overlooks the fact that in the busy season work promised is subject to arrival of parts ordered, often from a distant point, and should other machines come in for repairs, they too must be taken care of, although appearing to delay work already under way. The repair shop is not for those who consider they are always first, but for all who need the services of an expert mechanic. Much valuable time is wasted on those who expect the repair man to deliver up his knowledge of sparking devices, carburetors, commutators, coils, etc., to those who are intelligent in their own profession but do not absorb learning in so short a time as to grasp a mechanical system like that of the gasoline motor by simply listening to a few off-hand comments.

"A matter often causing dissatisfaction to an owner after ordering repairs contrary to the advice of an expert, is to have the job prove unsatisfactory, resulting in refusing to pay for the work. The best safeguard against this unpleasant state of affairs is to have the owner sign an order for repairs. This would protect all concerned.

"The repair man, by securing an agency for an automobile may add to his net income. The machine should be attractive and reliable and the price within the reach of all who appreciate an honest and simple machine. The tendency to handle high priced cars leaves the repair man too little time to properly keep in touch with his customers. The demand for second-hand machines should be a feature of profit, as these can be overhauled at odd times. The outlook for 1904 is good, and for the repair man with a well equipped shop and competent workmen there should be no reason why success should not follow in sections bordering on the boulevards or the strictly residence portions of the city."

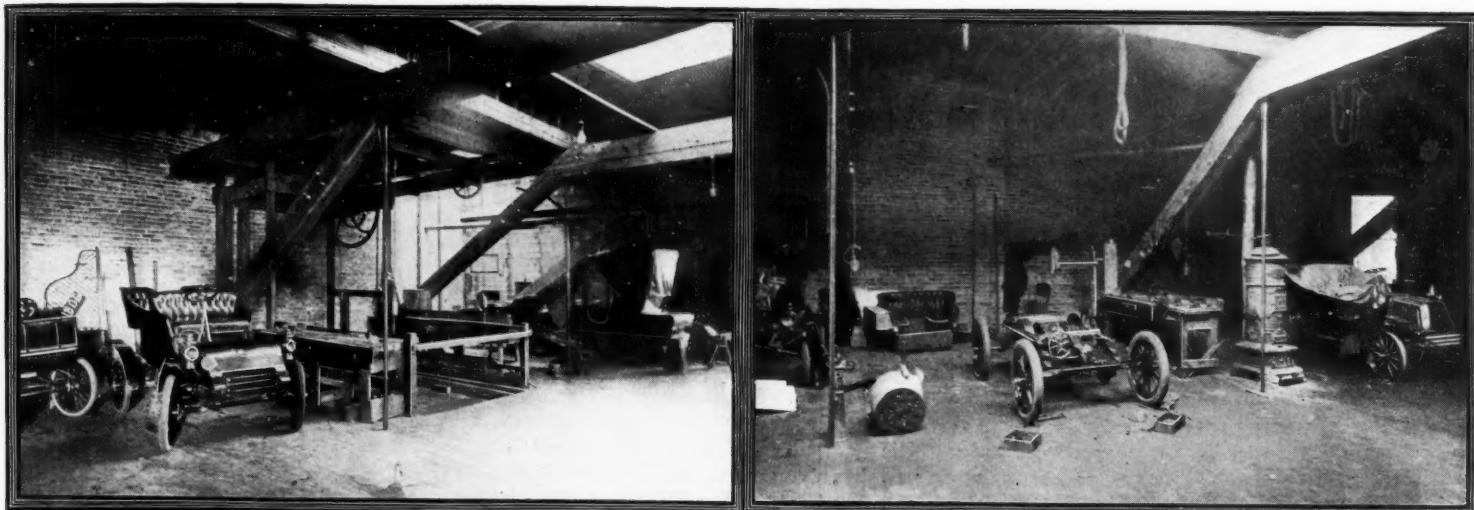
### BINGHAMTON HAS IMMENS GARAGE

With a population of 45,000, Binghamton, N. Y., has 130 automobiles, and it is recognized as one of the leading automobile towns of the state. The establishment of R. W. Whipple, recently completed, is in keeping with



MOTOR AGE

THE MACHINE SHOP

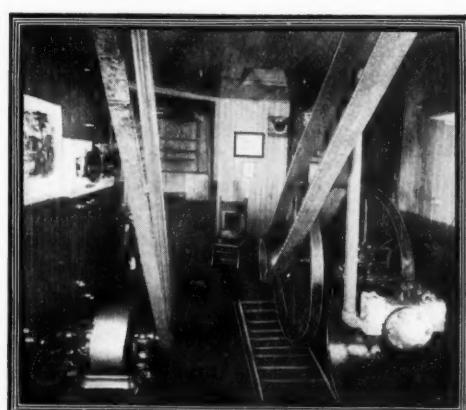


ELEVATOR ROOM OF REPAIR SHOP

MOTOR AGE

the spirit and surroundings of that city. The Whipple building fronts on Washington street with four stories, having five stories on Water street. The front is of pressed brick and Indiana limestone trim, having plate glass on both first and second stories, extending on both instances from floor to ceiling with scarcely any window sill or ceiling rail.

The building has a frontage of 60 feet and is 106 feet deep, containing about 33,000 square feet of floor space. The basement door opens from Water street, and the basement is concreted and drained, forming one large wash rack. The first floor has its entrance on Washington street. All carriage floors are laid of hard wood, quarter-sawed and laid diagonally, so that no flooring can be slivered. The show room is ornamented with an elaborate design of steel tiling and partitioned with glass. Large plate glass doors form the street entrance to this room, though no carriages are allowed to use this entrance.



MOTOR AGE

THE ENGINE ROOM

To the right of the main entrance is the reading room, where automobile literature is kept on file. The general and private offices are still further to the right. At the extreme right is the garage entrance. A large wash

ANOTHER PART OF THE GENERAL REPAIR SHOP

rack is on this floor within easy access to an elevator 8 by 16 feet, running from the basement to the top floor. Gasoline, oil in cabinets, greases, carbides, etc., are handled in a separate steel building connected by passage direct from the wash rack, and the gasoline is buried in the ground in 10-barrel tanks.

The second floor is an auxiliary show room, utilizing the second floor plate glass windows. The rest of the floor is used as a repair shop. It is fitted with pits with trap doors in the floor, overhead traveling cranes, two separate power plants, screw cutting lathes, high speed drill presses, and everything necessary for working metal and wood. This floor also is used for a stock room for automobile parts. A line of naphtha launches is carried in this department.

The third floor is occupied by the City Club and the fourth floor is used to store second-hand carriages, of which there is a considerable stock on hand.

## ALL ROADS LEADS TO ST. LOUIS

New York, March 1—The first meeting of the new board of directors of the American Automobile Association was held here today and a new racing board was chosen. This consists of A. R. Pardington, chairman; W. K. Vanderbilt, Jr.; O. W. Bright, of New York; Samuel Butler, William Wallace, of Boston; George Weiss, of Cleveland, and F. C. Donald, of Chicago. The technical advisers are A. L. Riker, of Bridgeport, Conn., and E. T. Birdsall, of New York. The retaining of Chairman Pardington was gratifying all around.

On account of the great interest of automobilists in automobile boating, and on account of the likelihood of numerous speed contests this summer, a special automobile boat committee was appointed to confer with the Power Boat Association regarding the control of speed boat racing. This committee consists of A. R. Pard-

### GENERAL AUTOMOBILE TOUR TO THE WORLD'S FAIR MAPPED OUT

proceed by the route west of the Hudson toward Buffalo, with night stops at Kingston, Unadilla, Elmira, Geneseo, N. Y. It will remain over Sunday in Buffalo, leaving for

Erie Monday, August 1. There will then be night stops at Erie, Pa., Cleveland and Toledo, O., Waterloo and South Bend, Ind., Bloomington and Alton, Ill., where the general rendezvous will be made with the parade into the St. Louis fair grounds the next day.

The tour of the New England party will start from Boston July 25, proceeding by daily stages through Springfield, Mass., Albany, Utica and Syracuse, N. Y., to join the New York division at Buffalo.

The southern division will start from Baltimore, Md., July 26, proceeding by Gettysburg, Bedford and Connellsville, Pa., to Pittsburgh where the Sunday stop, July 31, will be made. Monday the division will proceed to Youngstown, O., and then to Cleveland

### WORLD'S

### F A I R

ington, Peter Cooper Hewitt and L. R. Adams, and is to report in a month. It is probable that there will be a permanent automobile boat racing board, separate from the regular racing board.

The gathering of the clans at the St. Louis fair this summer was given its first definite preparation by the appointment of a St. Louis tour committee, consisting of Augustus Post, of New York; Frank X. Mudd, of Chicago; H. W. Smith, of Syracuse, N. Y.; C. E. Glidden, of Boston, and R. P. Scott, of Baltimore, Md. Cleveland and St. Louis members of this committee are yet to be appointed.

It is the intention to boom this tour and subsequent tournament early and late and make of it a mammoth advertisement of automobile strength and of the good roads cause.

The encampment at St. Louis is scheduled to begin August 9. The tour of the New York party is to start Monday, July 25, and

Tuesday, to meet the New York and New England forces. A central section party will start from Columbus, O., on August 4, proceeding by way of Richmond, Indianapolis and Terre Haute, Ind., Pana and Alton, Ill., to the rendezvous. It is planned that there will also be special tours direct to the rendezvous from Minneapolis, St. Paul, Denver, Omaha and Kansas City. In all cases the tourists will register at the night controls that those who cover the route may receive certificates.

The board of directors also appointed a law committee, it being James B. Dill, of New York; W. H. Hotchkiss, of Buffalo; D. Leahy, of Boston, and A. P. Fleming, of Los Angeles, Cal. A Chicago member is yet to be appointed. The highway committee appointed is Augustus Post, of New York; Asa Goddard, of Boston, and Emerson Brooks, of New York.

## MAY LEASE CLUB HOUSE

### The Automobile Club of America Is Considering Advisability of Taking Magnificent Establishment

New York, March 1—Agitation in the matter of a club house for the Automobile Club of America is likely to be again seriously started by a movement on foot to lease the magnificent club plant built by the Manhattan Athletic Club at Madison avenue and Forty-fifth street, and more recently occupied by the Knickerbocker Athletic Club. The house is now the property of the Iselin estate and has been unoccupied for over a year. Its last tenant was the Knickerbocker club, which was run on a proprietary basis by Mr. Ballantine, who preceeded the Iselin estate as the owner.

The house is a magnificent four-story, rough brown stone structure, 125 by 125 feet, and is equipped with spacious swimming tank, gymnasium, billiard room, bowling alleys, dining room and all the other conveniences of the modern athletic club. With it as its headquarters the A. C. A. would have the finest automobile club house in the world. The bicycle room and bowling alleys could be converted into a storage room, or by putting in an elevator the gymnasium might be utilized as a garage. An entrance now existing on the street level would furnish convenient ingress to the bicycle room, which might be used for transient storage. Altogether every desirable equipment of such a club is practically already at hand.

The present membership, which has already reached its limit of 400, would, as a matter of course, be insufficient to support such an expensive club plant. To secure the fourfold increase in membership required to assume the heavy expense of maintaining such a club house the club would have to be run on broader and more democratic lines than at present, and its roll would have to be thrown open to all automobilists of repute and respectability and the so-called social exclusiveness aimed at some extent now be abandoned. A membership similar to that of the great national clubs of Great Britain and France would make the club house scheme practicable. Such a membership, it is pointed out, could easily be secured with such inducements offered to the automobilists of the metropolitan district, to which a great non-resident membership could easily be added with the conveniences the club would afford for transient use and as a lodging place during visits to the city.

When the club house scheme has been suggested in the past the conservative element in favor of a continuance of the present policy has opposed it and argued that the members for the most part already belong to the city's big social clubs and desire nothing beyond the mere meeting place the present accommodations afford.

#### WILL HAVE CLUB ROOMS

One of the incentives used to stimulate attendance at the Buffalo automobile show by the members of the automobile club and their friends is that a goodly portion of the profits derived from the show will be used in furnishing and decorating the new club rooms now being prepared at 59 Franklin street. These rooms will be ready about May 1 and will be opened by a club smoker. The first

night of the show, March 7, will be club night and there will be features of special interest to the members.

The new club rooms will have a large assembly and reading room in front, with the secretary's office and committee room adjoining, while in the rear will be a card room, coat room, lockers and toilet rooms for ladies and gentlemen. It is the intention to make this the automobile headquarters not only for members of the club, but also for out-of-town visitors.

#### REFERRED TO COMMITTEE

New York, March 2—At the meeting today of the executive committee of the National Association of Automobile Manufacturers the matter of changing the dates of the New York show from January to December was taken up but without definite action. While the arrangements with the Madison Square Garden Co. for holding the show in January have already been made, the change is possible if desirable, and there is considerable sentiment in favor of it among the members of the trade. To determine definitely the desirability of such a change as well as the further proposed change of making the show open on Thursday and close the following Thursday, instead of extending from Saturday to Saturday as customary, a committee was today appointed. It will report at the next meeting of the executive committee.

The proposed general automobile tour to the St. Louis world's fair under the auspices of the A. A. A. was approved and hence it was decided not to hold a N. A. A. M. endurance run the coming summer. Members of the association will be requested to support the tour heartily, whereby this gathering of the motorists at St. Louis becomes in reality the gigantic co-operatively managed tour originally suggested by MOTOR AGE.

A committee was appointed to endeavor to obtain a reduction of freight rates on automobiles shipped to the world's fair. The Standard Motor Construction Co., successor to the U. S. Long Distance Automobile Co., was reinstated to the membership previously held by the latter company. J. Wesley Allison was elected secretary of the association to succeed A. B. Tucker, resigned.

#### SPRINGFIELD TO HAVE A SHOW

Springfield, Mass., Feb. 29—The Automobile Club of Springfield claims reason to be proud and highly gratified at the manner in which exhibition space in the Springfield city hall has been taken for the coming show. The floor plan of the hall shows but few spaces still remaining and negotiations are in progress for these. This state of affairs insures the club against losing money upon the venture, the expenses being now assured. It is claimed, and with reason, by the show committee that a small show like this one will afford better opportunity to the prospective purchaser of an automobile for making a selection than the immense shows of the big cities. The latter, by their numberless variety, confuse the observer and may prevent judicious choice. In this local show there will be sufficient variety of types to give good selection, but not enough to make the result confusing.

The Road Drivers' Association of New York has invited the governors of the A. C. A. to witness its annual speedway parade in May.

## ALMOST AN EVEN BREAK

### Oldfield and Hauseman Entertain the People of Savannah with Samples of Going on a Rough Track

Savannah, Ga., Feb. 26—After being twice disappointed by postponement, the people of Savannah were permitted yesterday to see a trial of speed between Barney Oldfield with the Winton Bullet and E. A. Hauseman with the Ford 999. The unusual motoring enthusiasm prevailing here, combined with the natural curiosity of the people to see the cars and drivers that have been the subject of so much newspaper comment, brought out a crowd of nearly 3,000 persons when the races were definitely arranged.

While the time made yesterday was not even in the neighborhood of world's records, it was sufficiently fast to thrill the southern folk, and fair women, gallant colonels and dusky cotton pickers alike cheered the drivers as their big machines thundered around the course which so long has been sacred to the high-bred trotter.

There were three heats on the program for the afternoon and the fastest time was made by Hauseman in the second heat, when he made the mile in 1:05. The track was rough and there were several minor mishaps which kept the record thermometer from going below freezing point.

The first breakdown occurred in the first heat. Both Oldfield and Hauseman were off to a good start with Hauseman a little in the lead. He widened the space to about 100 yards and was rapidly drawing away from the Bullet, when something went wrong and Oldfield quickly overhauled him. The crowd cheered, not knowing that anything had happened until Hauseman came to a dead stop on the back stretch. In accordance with a previous agreement the machine crossing the wire first was entitled to the victory for that heat, and Oldfield was declared the winner of the first heat.

A quarter of an hour elapsed before the second heat was on. Hauseman again got away first and went flying along at such a pace that the spectators rose and cheered lustily. Just as the machine passed by the gate nearest the stables it swerved slightly and screams went up from those near the fence. The wheels dashed into a small puddle of water and a dozen or more people were covered with mud. It was all done so quickly that they thought for an instant they had been hit by the machine.

As both machines were not in good condition it was decided to finish the contest with a 1-mile dash, which Oldfield won by getting off to a full flying start and forging ahead nearly a sixteenth of a mile before Hauseman got his machine in good pace. The final mile was made by Oldfield in 1:10.

The racers go from here to Macon, where they will contest Tuesday afternoon for the edification of the Maconites.

#### AUTOMOBILING ON LAKE ST. CLAIR

Detroit, March 1—Russell A. Alger, Jr., one of the leading spirits in the Packard Automobile Co., and a well known local automobile enthusiast, performed a feat last Saturday which has excited much interest among automobile men when he crossed from the mainland to St. Clair flats over the ice of Lake St. Clair in a 1904 Packard touring car.

The drive was undertaken as the result of a wager made by Mr. Alger. Accompanied by Mrs. Alger he drove up to Bingham's Lakeside inn about 1 o'clock in the afternoon, and after ordering lunch calmly announced that he wanted to drive over to the flats, about 9 miles, and wanted a guide who knew the currents in the lake to precede him in an ice boat, to keep an eye out for air holes.

Peter Vanderbush, who knows about all there is to know about Lake St. Clair, was secured and a little later the odd procession started off, Vanderbush going ahead in an ice boat to see that the track was clear and solid and Mr. and Mrs. Alger following in Mr. Alger's touring car.

The trip was made entirely without incident. The severe winter has put a heavy coating of ice over the lake and Mr. Alger had no difficulty in reaching the Old Club, at the lower end of the flats. On the way over Mr. Alger drove carefully, on account of the danger of running into an air hole.

Once started for home there was a different story to tell, however. Mr. Alger had the tracks of his car to go by and he opened the machine up. For a few minutes there was a nice little race between the ice boat and the touring car and then the ice flyer had to take a back seat. By the time Vanderbush had reached the mainland Mr. Alger had started for Detroit, having made the 9 miles across the ice in just 22 minutes.

#### BUFFALO TRADE GOSSIP

Buffalo, N. Y., Feb. 29—Everything is in readiness for the Buffalo automobile show, which opens Monday next. There is only the Sunday between the Cleveland and Buffalo shows and many of the exhibits will be expressed from the former show for the affair here. The St. Louis cars were shipped by freight here directly after the close of the Chicago show, but Hafer & Meadows, the agents here, are still looking for them.

Early in the fall J. A. Cramer accepted the agency for the Toledo, but on account of taking on the Ford, an unlicensed car, he was compelled to drop the Toledo. For some reason or another there is a whole lot of secrecy in the matter. It is believed, however, that some Tonawanda people are interested in the agency. Mr. Cramer has, however, reserved space for the Toledo agency at the Buffalo show.

Denny & Mabbitt, who took the agency for the Wolverine car at the New York show, have decided to drop it and the business for this year.

The Hayes Automobile Co., so far as Mr. Hayes is concerned, is also down and out. Mr. Hayes has large interests in Cuba and hereafter will be away most all the time and consequently will have no time to devote to the automobile industry. His right hand man, George Andrews, will, however, in all probability continue the business, but whether he will retain the Locomobile agency is not settled.

The Buffalo Garage Co., which handles Thomas automobiles, motor bicycles and motor boats, has taken on the agency for the Prestcott steam car.

Ephriam Pros. have secured the store 557 Main street, and will take possession next Monday with the Elmore agency. They will also handle the Continental tire and automobile sundries.

The older firms all have about the same lines carried last year.

## CONSTABLE'S RARE LUCK

### Automobile Left In His Charge 6 Months Ago; Owner Never Came Back - Hartford Trade Doings

Hartford, Conn., Feb. 29—Constable Charles Hall, of Rocky Hill, bids fair to enter the ranks of motorists and the news will be welcomed by those who have dared to drive fast over the Hartford-Middletown highway in years past and who have been held up by the local constabulary. The ownership by the constable of an automobile is peculiar and the transaction could hardly come under the head of regular.

Last fall two New York motorists became stuck in the town. The mixture didn't work or they didn't get any spark. The car refused to budge. It was raining and near night when the car was pushed up to the barn of Constable Hall, where the owners asked permission to leave it for the night. The constable granted the request. Six months have elapsed and nothing has been heard of the motorists. All this time the car has remained in the constable's barn, where it has been the object of curiosity from all the countryside.

When the owners took their leave they did not give their names or addresses, nor were they known to the people of the town. Immediately after leaving they took their departure from town by the steam cars and nothing has since been heard of them. Further than that the car is painted a flaming red and that it is of the gasoline type, Constable Hall has nothing to say, declaring that any who claim the property must prove it satisfactorily as theirs. During the winter the constable has given gasoline engines his attention and has been studying the motor which drives a water tower pump of one of his neighbors. He has got the machine so that it will run and report has it that he will use the car during the coming summer if it remains in his charge, while the owners, if they claim the car, will have to pay him a considerable storage bill. The constable wears the smile which is non-removable and declares that in any event he wins.

The Electric Vehicle Co.'s two-cylinder 12-14 horsepower car is more than realizing the expectations made of it in the exhaustive tests which have been in progress with the first lot of cars to be assembled, according to report. The road tests given the cars are most severe and every demand made upon the cars is being realized. The officers and engineers of the factory are much pleased with the results and the sale is now large, so that indications are good for the success of the car.

L. H. Elmer, agent for the Rambler in Hartford, Middlesex and Tolland counties, sold a model K car to Dr. John Palmer, of New London, during the week. Elmer has now practically sold all the cars of his original order and is negotiating for more cars for early delivery.

An order for five forty-passenger electric coaches for sight-seeing use, has been placed with the Electric Vehicle Co., and work has begun. The cars will be ready for delivery for the summer riding season. It is said they are to cost in the neighborhood of \$4,000 each.

The managers of the Montville Street Railway Co. in the eastern part of the state are considering the establishing of a motor car extension line. The Pequabuck experience of the Bristol and Plainville Tramway Co. is be-

ing watched, and if successful the Montville company will then establish the same service. The Pope Mfg. Co. has made an announcement which will be welcome to women drivers of electric automobiles. The Waverley type which has been a popular seller at \$850 of the piano box runabout design, is to be sold in Hartford for \$500. Thirty cars are to be shipped from the Indianapolis factory of the company to Hartford. It is expected this number of cars will be readily disposed of.

Though the weather has been frightfully cold and the roads most difficult to travel on, 10 miles being the limit of speed, Laurence Duffie has been driving a big new Columbia car all the week about the city. On Thursday the water was so deep in the country districts that it carried into the motor and bad holes were everywhere met. Duffie continued to drive, however. Friday the temperature dropped below zero.

One of the most unique automobiles of the electric type is being put through the factory of the Electric Vehicle Co. and is for Mr. E. S. Gold, of New York. It resembles a gasoline tonneau, has double chain drive, a bonnet forward, wheel steer, emergency brake lever, and every feature to make it impossible to easily distinguish it from a large size gasoline vehicle. Under the bonnet is located the greatest number of battery cells, although a small number will be located under the forward seats.

#### NEW LIMOUSINE COMPANY

Chicago, Feb. 29—The Limousine Co. of America, which recently went into the hands of a receiver, has been succeeded by the Limousine & Carriage Mfg. Co., with O. C. Graff as manager. Mr. Graff has been in the employ of C. P. Kimball & Co. for the past 15 years, where he was in charge of the body building department. The new company will also do all kinds of carriage and automobile repairing and will make special designs if desired. The company will be located at the old stand, 542 Wabash avenue.

The Chicago branch of the National Association of Retail Automobile Dealers met last week and received a draft of a constitution which has been taken under advisement. At the next meeting officers will be elected. President Ollier will call a meeting of the national association in the near future.

The Apperson Bros. establishment on Wabash avenue has been thoroughly overhauled and the rooms put in attractive condition for the spring business. C. J. McClain and Jack Fry are in charge.

The Cadillac Co. of Illinois has taken the agency for the Clement car.

President John Farson, of the Chicago Automobile Club, entertained Augustus Post, of New York, last week. Mr. Post is chairman of the roads and tours committee of the American Automobile Association, and he is now at St. Louis interviewing the world's fair officials in regard to the automobile run to the fair next summer.

The directors of the Chicago Automobile Club, with its attorney, Sidney S. Gorham, will meet with the law department of the city next week to consult and arrange for an ordinance governing automobiles in the city. Corporation Counsel Tolman and President John Farson are both out of the city at present, and the date of the meeting cannot be definitely decided until they return.

## EXPORT FIGURES GROW

Over a Million Dollars Represented  
in American Automobiles Sent  
Out in the Past 7 Months

Washington, D. C., Feb. 27—The bureau of statistics of the department of commerce and labor has prepared a comprehensive statement of the exports of various American manufacturers, showing countries of destination, during the fiscal year ending June 30, 1903. Among other things, it is shown that the total exports of automobiles during this period were valued at \$1,207,065. The shipments of automobiles to the various countries during the fiscal year were as follows:

Europe—Austria-Hungary, \$1,850; Belgium, \$3,670; Denmark, \$6,431; France, \$98,029; Germany, \$30,798; Italy, \$8,200; Netherlands, \$10,164; Portugal, \$12,904; Russia, on Baltic, \$813; Russia, on Black sea, \$875; Spain, \$1,506; Sweden, \$1,226; Norway, \$2,500; Switzerland, \$3,660; United Kingdom, \$670,811.

North America—Nova Scotia, \$2,916; Quebec, Ontario and Manitoba, \$130,515; British Columbia, \$3,155; Newfoundland and Labrador, \$2,025; Mexico, \$24,783; British West Indies, \$4,948; Cuba, \$11,345; French West Indies, \$800.

South America—Argentina, \$6,588; Brazil, \$6,900; Colombia, \$148; Ecuador, \$10,921.

Asia—Chinese Empire, \$5,200; British East Indies, \$15,032; Dutch East Indies, \$2,544; Hongkong, \$1,600; Japan, \$13,737.

Oceania—British Australasia, \$48,078; Philippine Islands, \$3,085.

Africa—British South Africa, \$59,048; Canary Island, \$260.

Recapitulation—Europe, \$853,437; North America, \$180,487; South America, \$24,557; Asia, \$38,113; Oceania, \$51,163; Africa, \$59,308.

While figures are generally dry reading, the above compilations, showing as they do the relative strength of all the countries of the world as purchasers of American automobiles, are worthy of careful perusal by every manufacturer who is interested in foreign trade.

According to the latest compilations of the department there was a decline in the value of the exports of automobiles during January last as compared with the same month a year ago, the figures being \$89,535 and \$114,374, respectively. During the 7 months' period ending with January, however, there was a big gain in these exports, the value for the last 7 months being \$1,014,124, as compared with \$602,999 for the 7 months of 1903, and \$394,682 for the same period of 1902.

### BOSTON IS ALL SHOW TALK

Boston, Feb. 29—New models of cars intended for the Boston automobile show are being received. The high grade vehicles of the Pope company arrived during the week, as did also two models of the Autocar.

John L. Snow, of the Peerless company, drove a 24-horsepower Peerless touring car from Boston to Providence, last week, a distance of 45 miles. The roads were in miserable condition, and the trip required the greatest of patience and forbearance on the part of the driver, as shown by the fact that the last 20 miles of the trip took 5 hours. However, despite the great banks of snow and the ice-covered roads, the party reached Providence with the motor and car in fine shape.

J. H. MacAlman, of the Locomobile company, made a strike during the week. With deep snow on the ground he disposed of two of the steamers built by his company. Mr. MacAlman is making extensive preparations for the show, and will reproduce the exhibit made by his company at New York and Chicago.

Harry Fosdick, of the Winton company, leaves Boston Tuesday for Cleveland to attend the show to be held there next week.

The National company is to establish a branch house here in Boston. Mr. Barney has been appointed resident manager, and expects to open here in a week or so, at any rate in season to exhibit at the show.

There is every reason to believe that during the week of the show there will be more or less record work attempted. The majority of the out-of-town exhibitors who have heard so much about the Commonwealth avenue hill-climbing record have determined that when they leave Boston they will carry with them what is considered as the blue ribbon record of Boston and vicinity. Three New York exhibitors, who are handling cars of foreign construction, have announced that they propose to lower the records. The committee having charge of the exhibit, being anxious to entertain visiting exhibitors in a manner befitting the occasion, has arranged for the holding of a smoker on Tuesday evening of the show. The smoker will be held in Potter hall, commencing at 11 o'clock and will continue for several hours. This will take the place of the dinner of a year ago, and will be less formal, speech-making being barred.

The Massachusetts Automobile Club has decided to hold an automobile race at the Readville track on Memorial day, when it expects to repeat its success of a year ago. A committee consisting of George R. Alley, W. E. Eldridge, William Wallace and Gilman Clapp has been appointed to arrange for this meeting, and also to make arrangements for the holding of a hill climbing contest April 19.

### LONG AUTOMOBILE RAILWAY

Portland, Ore., Feb. 24—An automobile line is being planned here, which, if established, will give Oregon the longest and one of the most remarkable automobile railways in the world. The proposition is to build an automobile freight and passenger line by the Columbia Southern railway, between Bend and Burns, to connect with the extension of the railroad to the latter place. Freight motors capable of hauling 12 tons and passenger cars for twenty persons are to be operated, giving a daily service between Burns and Bend. By this means freight from the interior of the state that now requires 6 days for moving to a railroad can be delivered at Portland in less than 2 days, and passengers can reach here in 24 hours. This line will open a country that has long suffered from lack of transportation, and it will serve the purpose almost as well as a railroad.

### LESSON IN ROAD MAKING

A convention will be held at the chamber of Commerce in Erie, Pa., March 16 and 17, under the auspices of the officers of the New York and Chicago Road Association. Notable speakers and practical road builders will attend, together with representatives from towns along the route. It is the purpose of the association to build an object lesson road, which will be used to educate the people by showing them that the best is the cheapest in the long run.

## BUNCO GOTHAM AGENT

Scheme to Work Automobile Dealers  
—Percy Owen Nearly in the  
Spider's Web, But Escapes

New York, Feb. 28—The bunco man has chosen Autoland for a stamping ground. He comes with a brand new game—clever, plausible and likely to catch even a wise one. Even Percy Owen, well up in the wiles of this wicked city, confesses that his escape was a narrow one. It is hinted that a similar game was tried on another local dealer. It is whispered that he far from escaped unscathed. This is the story Percy Owen told a MOTOR AGE man:

"The other day a middle-aged man, whose general garb and mien were in keeping with his line of conversation, came in accompanied by a companion or retainer. He introduced himself as Charley Dwyer, the turfman, owner of Africander, and said he had been commissioned by Fuller, the jockey, then riding at New Orleans, to buy a touring car and engage a chauffeur for him. Fuller, he said, expected to return in a day or two, would put up at the Plaza, and wanted the car to carry him to the training track at Gravesend early in the mornings. In the most natural way possible he spent an hour discussing the car, its machinery and its merits, and finally said he would make the necessary deposit as soon as he could communicate with Fuller and get a check from him. He interspersed his talk with horse as was natural. He showed me what he declared to be the plans of the new clubhouse at the Jamaica track and spoke of the big money Fuller made as a jockey. There was nothing to arouse suspicion.

"After bidding me get the car ready and engage a chauffeur he shook hands and went toward the door. He returned, though, and informed me that he had taken up a lot of my time, that I was a good fellow and all that sort of thing, and that he wanted to put me next to a chance to make a little money. He said he was going to start a horse named Rocket at New Orleans that day for a sure thing, and that he was going to put a couple of thousand on him himself and asked me whether he should not lay a hundred for me.

"I told him I didn't follow the races beyond making a little bet on Suburban or Futurity day and I didn't care to risk a hundred.

"All right then," he replied "go out to a pool room and lay a ten shot yourself."

"I told him I knew of no pool room. Then he told me of one at Fifth avenue and Twenty-eighth street. I said that was too far to go.

"My man will go there for you," he remarked as he left.

"An hour later the retainer returned. In the meantime I had looked over the entries and saw there was a horse named Rocket among the starters.

"Here's a ticket on Rocket," said he.

"What ticket?" I asked.

"The ticket Mr. Dwyer told me to buy for you," he replied.

"But I don't know Mr. Dwyer," I replied, intuitively, having got suddenly wise.

"All right, then," he said, "Mr. Dwyer will take the ticket," and moved toward the door.

"I told my office boy to follow him. He met 'Mr. Dwyer' around the corner. The pair walked up Broadway and entered a saloon.

"I tell you this by way of warning to the

boys. Some of them, elated at the prospects of a sale to a noted jockey, through a prominent turfman, might think it up to them to be sports and good fellows under the circumstances and so get nipped for a ten spot or more. Apparently the bungoing fraternity has decided that automobile tradesmen have plenty of money and spend it freely."

#### SYRACUSE FACTORIES BUSY

Syracuse, N. Y., Feb. 29—All of the local automobile factories, with the exception of that of the Century Motor Vehicle Co., which is closed, are being worked to their utmost capacity. Edward C. Stearns, president of the Stearns Steam Carriage Co., predicts a large business for his company this season and says the plant is being run with a complete force of men.

Several changes have been made in the J. S. Leggett Mfg. Co., J. S. Leggett now being president and treasurer. The company's factory was reopened February 1 and new men are being put to work continually. Mr. Leggett says the outlook is first rate for a big season. This company is now putting into the market a four-cylinder, 15-horsepower touring car with direct or chain drive. The machine is known as the Iroquois. The company has also begun the manufacture of automobile bodies.

What is to become of the plant of the Century Motor Vehicle Co. is not known, although local manufacturers are of the opinion that it will be closed up. They say it is well fitted for a machine shop or the making of automobile parts, but that it is not complete for the purposes for which it was intended. The machinery cost about \$50,000. A movement was on foot at one time to unite the Century and Leggett companies and make the bodies at the latter's factory, but the deal fell through owing to the liabilities of the former company.

The R. M. Cornwell Co. has opened a retail store at 416 South Salina street, having the agency for the Toledo, Winton, Olds and Baker.

Bernard Stire and Arthur J. Brewster, the former a chemist, have formed a co-partnership and under the name of B. Stire & Co. are manufacturing Stire's hand cleaner, which is taking well with automobilists and automobile manufacturers. It is in the form of a paste and when spread over the hands and washed off takes with it all grease, paint or other foreign substance.

#### TRADE AT NIAGARA FALLS

Niagara Falls, N. Y., March 1—Last year W. H. Davey did a very good automobile business here. He was the agent for the Pierce and sold a number. He also did a repair business. In fact, Davey had matters automobiling pretty much his own way. Last fall, however, he got into serious trouble and whether justifiable or not he is now serving a term in state's prison. Harris & Wilson took up the business where Davey left it and will look after the Pierce interests this season. They will endeavor to dispose of some Orient buckboards. It is also the intention to use the little buckboard for a parcel delivery on a small scale.

G. & J. M. Rae, the well known sporting goods firm on Falls street, have decided to embark in the business and have secured the Rambler agency. John Tugby, a popular young business man, is interested with the Rae people.

## FRENCH TRADE METHODS

### Industry Divided Into Four Classes, and Several Sub Classes—American Methods Are Employed

According to J. W. Bonnet, a French automobile dealer, the automobile industry in France is divided into four different classes—the manufacturer, the direct agent, the sub-agent and the customer.

The manufacturers are divided into those making automobiles exclusively and those who have added this industry simply as a side line. At present, most of the well known cars are manufactured by makers belonging to the first class and the prices of these machines vary between \$2,400 and \$7,000. Racing machines are not included and generally cost between \$5,000 and \$10,000, according to the power.

Among the exclusive manufacturers there are many cheap machines, which are generally termed "hardware," if not "junk;" they have cheap equipment and are built without special purpose, except to make as many as possible, notwithstanding quality.

The direct agent, when located in a large city like Bordeaux, Lyon, Toulouse, or Marseilles, generally carries two lines of automobiles, one of cheap motor cars and the other of the better class. An agent generally has a territory covering from six to ten departments, which are similar to counties in America. The agent usually places his orders for fifteen to thirty cars of each make, of course, according to his means and the prospects for sales. Most of the time he is required to pay one-third cash when placing the order and, as but few agents are wealthy, they can seldom order as many cars as they would like.

The direct agent, who has a large territory, that is, from six to ten counties, is not in a position to attend, as he should, to his business all through these counties, and for this reason always appoints sub-agents in the capital of each department and sometimes in several towns where there are a great many in the department or county.

This sub-agent receives one-half or two-thirds of the regular commission which the direct agent receives from the manufacturer and which seldom amounts to 12 per cent. Thus the profit on the sale of cars is not so great as the general public often thinks. On the other hand, the general and sub-agent usually derive a good revenue from the sale of appurtenances and parts, and from repairing cars.

The customers, which are, in fact, the most important people in the trade, are divided into two different classes. There are those who want first class machines, the best and expensive ones, and those who would rather have automobiles at moderate prices. Naturally the wealthy people are those who buy the most expensive cars, while those who generally do not know much about automobiles are in the market for the popular priced cars, which cost from \$700 to \$2,000.

Some of these cars, even in the hands of experts, after being used 2 years, cost about as much as first-class automobiles, on account of the cheaper material and the accessories which have been used and also because of their finish, which is generally poor.

The demand for this kind of car has declined lately, and people are beginning to realize that it is more economical to purchase a car that costs more, rather than a cheap one, which looks about as good, costs much less, but which,

in fact, is not worth half the price asked for it by the maker and dealer.

Outside of the rather small number of Mercedes and Napier cars, foreign automobiles are not of great importance upon the French market. A large number of people expect the competition of American cars will sooner or later result in bringing about lower prices of the home products.

#### LONG TRIP THROUGH MOUNTAINS

San Francisco, Cal., Feb. 24—A trip was made recently by A. A. Moore and party from this city to Los Angeles in a four-cylinder Locomobile. The distance is 487 miles, of which 230 is over mountains. The only trouble experienced on the trip was when the shoe of a tire blew out. The tourists crossed seven mountain ranges, and as indicating the character of the country, on one day's run the gasoline gave out after 76 miles had been traveled, although under normal conditions the car would run 140 miles on its tank capacity. When the gasoline gave out, it was just getting dark, and one of the party walked until 2 o'clock in the morning, finally getting a train into Santa Barbara, where he got gasoline and returned the next day. The trip was by the coast route, and from King's City to Los Angeles the road is practically all mountainous. The mechanism of the car gave no trouble whatever on the entire trip.

Fred A. Jacobs, formerly vice-president of the National Automobile Co., has opened his new quarters at 1331 Market street, where he will handle the Rambler car.

The Stockton Automobile Co. has opened a new garage and a number of licensed automobiles will be handled. The repair department will be in charge of Gus W. Webber and the electric department will be looked after by Messrs. Toal and Snyder. The officers and directors of the company are: President, J. P. Sargent; vice-president, F. P. Adams; secretary, Harry H. Hewlett; B. W. Moore and Pliny E. Holt, directors.

#### MOTOR CAR PART WILL BE READY

Appearances indicate that few of the exhibits at the St. Louis fair will be ready on the last day of April. The N. A. A. M. will make an earnest endeavor to make the automobile exhibit an exception. On Thursday contracts for all the work will be made by Manager Miles. This will include a maple flooring for the whole space, the necessary posts and railings, overhead decorations, wall and partition covering, furniture, rugs and every item necessary to so prepare the spaces that the exhibitors will have nothing more to do than roll their cars into position. L. L. Fest, superintendent of the late Chicago show, who was appointed superintendent by the exposition authorities upon the recommendation of the N. A. A. M., will assume charge of the automobile department on Tuesday next and will be ready to receive exhibits immediately thereafter.

It is probable that Henry Louther, M. E., of Hartford, will be appointed a member of the international jury on awards, also upon the recommendation of the N. A. A. M.

The exhibit of N. A. A. M. members will cover 40,500 square feet and will have a frontage of 2,000 lineal feet. The cost to members, under the plan adopted, will be less than one-half and probably not over one-third that incurred at former expositions. A complete description of the equipment will be mailed to members within a week.

# MOTOR BOATS AT THE SPORTSMAN'S SHOW



NEW YORK, Feb. 27—If evidence were needed of the almost instantaneous leap of

the motor boat into public appreciation and popularity, it might be found in plenty within the walls of the Madison Square garden during the period of the annual sportsmen's show. For years past this exhibition has followed certain conventional lines, being devoted almost exclusively to hunting, fishing and woodland sports with gun and rod; as such it has appealed to extensive business interests which have patronized it most liberally as exhibitors. This year the impetus of a new and unknown sport has made itself felt, with the result that the garden has surrendered to it.

The automobile boat is not only new in France, but practically unknown in this country. The type has hardly been seen on American waters; but the mere promise of what it will be within the next few months has made it the distinct feature of the year in aquatics.

In providing for the adequate setting of the motor boat exhibit, the garden management has relegated all the old attractions to the background, the entire main floor being devoted to boats and motors. There are woodland dec-

orations, as of old, and some very interesting exhibits of rare birds, with a few wild animals, but all of these are inconspicuous and almost unnoticed. The center of the floor is occupied by a large square tank, with water to the depth of 4 feet; around the sides of this are the stands of the leading boat builders, each conspicuous by a brilliant sign—Lozier, Speedway, F. I. A. T., Standard, Smith & Mabley, Panhard & Levassor, Electric Launch Co. At the first glance one is left in doubt whether he is at the sportsmen's show or the automobile show as he reads the familiar names of the latter industry.

Within the tank float a number of boats of different types, from the modest gasoline launch of plain construction and with single-cylinder marine motor, up to the most delicate and costly constructions of mahogany, with light automobile motors. Several boats, gasoline and electric, are used for the ferriage of passengers, a cruise around the lake costing 10 cents.

At the head of the tank on the left of the main entrance is the stand of Hollander & Tangeman, of New York, agents of the F. I. A. T. motors and automobiles. The F. I. A. T. is already well known in this country, but it

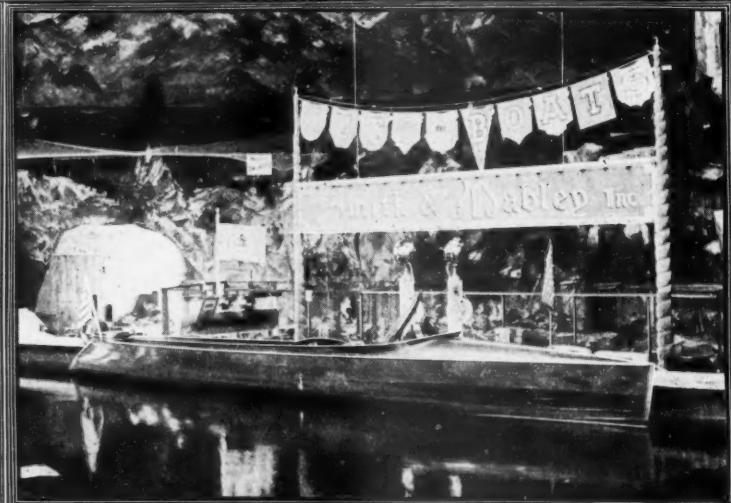
is not so well known that the same company has for several years made a specialty of speed boats and marine motors, having built a number for the Italian government and for private owners. The motors run from 16 horsepower up to 60, 150 and 300; much larger than anything yet seen on this side. Naturally they are all patterned closely on automobile practice, the smaller being identical with the motors of the F. I. A. T. cars.

One boat is shown by the Electric Launch Co., of Bayonne, N. J. She is of the extreme type, with stem raking forward, turtleback to fore deck, and a round stern above water with the regular flat over the wheel. The hull is of two thicknesses, each  $\frac{1}{8}$ -inch thick, the inner being of elm, laid diagonally, the outer of mahogany, laid fore-and-aft. There are several stringers inside, to stiffen this skin, but very few frames. One peculiarity of the model is the turning in of the sides to meet the deck, there being no angle between deck and topsides. The dimensions are: Length over all, 35 feet; breadth, 5 feet 6 inches; draft, 18 inches. The boat is shown with a F. I. A. T. motor of 24-30-horsepower, but a larger motor will replace this. The motors are, of course, imported from Italy, and the first few of the marine type are just arriving.

The Standard Motor Construction Co., formerly the United States Long Distance Automobile Co., of Jersey City, is well known from the many boat motors of the usual type now in use under the name of Standard. Last summer it entered the new field with a speed hull of extremely light construction, driven by an entirely new motor, strictly of the marine type, but on different lines from the older motors. The motor throughout was designed on the lines of a marine steam engine, with plain bed-plate, and the cylinders, six in number, carried on light steel columns, with diagonal braces. With the conventional trunk piston of the explosion motor, many of the details followed closely the practice in steam design. An extra set of cams was fitted to the three forward cylinders, by which compressed air could be admitted; these cylinders running forward or backward by the power of this medium. In starting, the air is thrown on to the three cylinders, a few turns are made, and as soon as the other three take their charges of gas and the explosions begin, the air is shut off and the first three take their charges of gas. The engine may be run forward or backward by means of the air, in practice handling like a steam engine, while the admirable carburetor and throttling system of the Standard motors



THE LOZIER DISPLAY



THE VINGT-ET-UN

give a flexibility second only to steam. This engine of 110-horsepower is shown turning by means of compressed air.

In the tank behind the Standard booth is moored a handsome mahogany launch, Dolphin II, built by the Huntington Boat Co., of New Rochelle. This boat is modeled after the Dolphin, designed by E. W. Graef, of Rudder, and so successfully tested last summer. The bow is a vertical wedge, gradually altering its form to a V amidships and then flattening out until the after body assumes the form of a wedge laid horizontally. The hull is double-skin, a very neat piece of workmanship. The decks are of planished copper. The motor is placed as far forward as possible, covered

cockpit. The hull is carved built, with a single thickness of planking, quite light. The steering is by means of an automobile wheel at the fore end of the well, a large and comfortable arm chair being arranged for the helmsman. The motor is forward, and abaft it is a cockpit with one fixed seat carrying two leather chairs and also a separate chair. The motor is four-cylinder, four-cycle, giving a nominal horsepower of 24 at 500 revolutions. The heads are cast solid, each cylinder being a unit. The valves are at the top of the cylinder, only the exhaust being mechanically operated. The jackets are of the applied type, and the cylinders are supported on light steel stanchions. A planetary reversing gear is used,

interchangeability of all parts, the handsome enameling, and the heavy nickel-plating. The peculiar locking of the crank by means of a nut and Woodruff key in the Eagle bicycle is duplicated in the attachment of the flywheel to the shaft in the marine motor; by means of a wrench the flywheel may be forced off easily and replaced quickly and solidly.

The Panhard motor has already won an enviable reputation on the Seine in such fast launches as Lutece and Rapée II, the latter in particular showing remarkable speed. A. Massenat & Co., who have recently established shops in New York for the repair of the Panhard cars, will also import the motors for launches. The company has a well furnished



MOTOR AGE

GENERAL VIEW OF THE SPORTSMAN'S SHOW AT MADISON SQUARE GARDEN

by two hinged sections of the deck, which may be raised to give access to it. The helmsman is seated on a fixed thwart just abaft the motor, with an automobile wheel in front of him and all the levers of the motor within easy reach, even the starting being done without leaving his seat. Aft of him is a shoal cockpit, at the level of the waterline, with no chairs, only rugs and low seats. The power is one of the new Standard automobile motors—by the way, an introduction of marine practice into car work.

The Speedway boats have their berth at the great plant of the Gas Engine & Power Co. and Charles L. Seabury & Co., at Morris Heights, on the Harlem river. On the opposite side of the river runs the famous speed way, loved by all New York horsemen, and the measured miles on this road, marked by posts visible from the river, give an excellent testing course for the boats. The combined companies are veterans in boat construction, but even they have recognized the demand by a radical addition to their list of pleasure craft. During the past season both Mr. Seabury and Mr. Howard have been at work on new models of motors, at the same time being occupied with the development and practical construction of a new automobile. The principal feature of the exhibit is the launch Queen, a mahogany boat of 32 feet 6 inches length and 4 feet 10 inches breadth. The model shows a raking stem and a curved stern of the torpedo type—the forward deck is of mahogany, turtle-backed, and there is a long

the speed astern being three-fourths of the speed ahead.

The great attraction of the Smith & Mabley exhibit, located at the foot of the tank, is, of course, the launch Vingt-et-un, for which a speed of nearly 25 miles an hour is claimed. So much has been printed about this boat that all are eager to see her. A handsome mahogany model of a 30-mile launch is shown, also the design of the \$2,000 cup for the match between this company and the F. I. A. T. The Vingt-et-un lies afloat, with engine running and propeller turning, and at times is taken out on the tank, though, of course, very carefully run. The hull is of mahogany, ship-lapped, built by Thomas Fearon, of Yonkers. The motor is placed forward, the helmsman sits just abaft it with steering wheel, starting crank and control levers close under his hands, while there is a cockpit aft for five or six persons. The motor is the new Simplex, built for both car and boat work. The firm will soon have out the first of its special marine type, of four-cylinder, 75-horsepower.

The name Eagle, once well known to cyclists, is winning new fame among the owners of the smaller classes of launches, the marine motor made by the Eagle Bicycle Co., of Torrington, Conn., being noted for some of the special details and the same grade of workmanship which made the bicycle famous. The Eagle is a single-cylinder, two-cycle motor, built in sizes of 2, 4½ and 6-horsepower, for open launches and power tenders. The relationship to the bicycle is shown in the complete

space, and beside it in the tank is a handsome speed boat, built by the Electric Launch Co. and similar in form and construction to the F. I. A. T. The dimensions are: Length, 31 feet; breadth, 4 feet 6 inches; draft, 8 inches. The motor is the 1904 Panhard, fitted for either car or boat, with the Krebs carburetor. The exhaust passes upward to a horizontal muffler carried over the motor, an ornamental casing and oval stack giving a finish to the launch and carrying off the exhaust.

The work of the Electric Launch Co., of Bayonne, in the line of the more costly automobile boat has already been described. At the company's stand is shown one of the stock boats, the 21-footer, fitted with Eagle motor, which has proved very popular within the past year. In the tank is shown a 25-footer, Electra, with a small launch, the Buster Brown, the latter carrying passengers and being the special choice of the small chaps.

The Lozier Motor Co. shows this year a new model of all-around pleasure launch, built in two sizes, 21 and 25 feet. This has a raking stem and torpedo stern, the white topsides are set off by mahogany wales, plankshears and brass railings. The motor is placed aft, giving the cockpit up to the passengers. One of these boats, the Water Boy, is running about the tank. On the floor are shown the familiar two-cycle motors in various sizes, the new four-cycle 20-horsepower marine motor, and the "auto-marine," a high-speed motor of the car type, four-cylinder, each 4½ by 5½ inches, with mechanically operated valves, governor and



THE STANDARD EXHIBIT

the general construction of a car motor, but fitted with different bases for car or launch.

The C. H. Blomstrom Motor Co., of Detroit, Mich., is a new-comer in New York, but it is well represented by its exhibit of launches and motors. One of the company's specialties is an open 15-foot launch, fitted with 1½-horsepower motor, designed to sell at a low price.

The Western Launch & Engine Works, of Mishawaka, Ind., represented by Newbury & Dunham, shows its regular type of open pleasure launch, fitted with the Western motor, and at the same stand is shown the White four-cycle motor and the launches of the Pearson Boat Construction Co., of Duluth, Minn.; one of the latter being afloat in the tank.

The Pierce boats and motors are shown at a handsome stand under the management of the New York representative, the Siegel-Cooper Co., one launch being afloat in the tank.

The Spaulding Gas Engine Works, of St. Joseph, Mich., shows its motors of both two-cycle and four-cycle type, of the usual pattern with cast base and crank case. The cylinders and heads are cast solid and special provision is made for lubrication. The wrist-pin is lubricated by a sight-feed oiler attached to the top of the cylinder, a passage being drilled in the cylinder walls by which the oil is led down and into the cylinder, where it passes into the side of the piston and the wrist-pin bearing on every stroke. At the other end of the con-

necting rod is cast a small pocket with an oil-hole to the crank bearing. Oil is led by a pipe into the side of the crank-case in such a way as to fall into the pocket in the connecting rod, thus being conveyed directly to the shaft, without depending on the splashing.

The Buffalo Gasoline Motor Co., of Buffalo, N. Y., shows a full line of its well-known high-speed motors in all the smaller sizes. This motor has been further improved in minor details this year, retaining all the standard features. The four-cylinder 20-horsepower is a very convenient size for the medium class of launches, both open and cabin. The cylinders are 5 by 6 inches, the flywheel is but 22 inches in diameter, and the weight, with reversing gear, is 1,425 pounds.

The Lackawanna Motor Co., of Buffalo, N. Y., shows a neatly designed motor that is new to New York. The crank-case is in the form of a box casting with separate ends, fitted and bolted fast, the main bearings being in the center of each end. The arrangement is such that all parts may be faced and bored in a lathe with a certainty of accurate fit and alignment. The cylinders are cast with solid heads; one, two or three in a single casting, so proportioned as to admit of very accurate machine work with no danger of undue expansion at any point.

That fighting four-cycle motor, the Strelinger, made by the Charles A. Strelinger Co., of Detroit,



MOTOR AGE

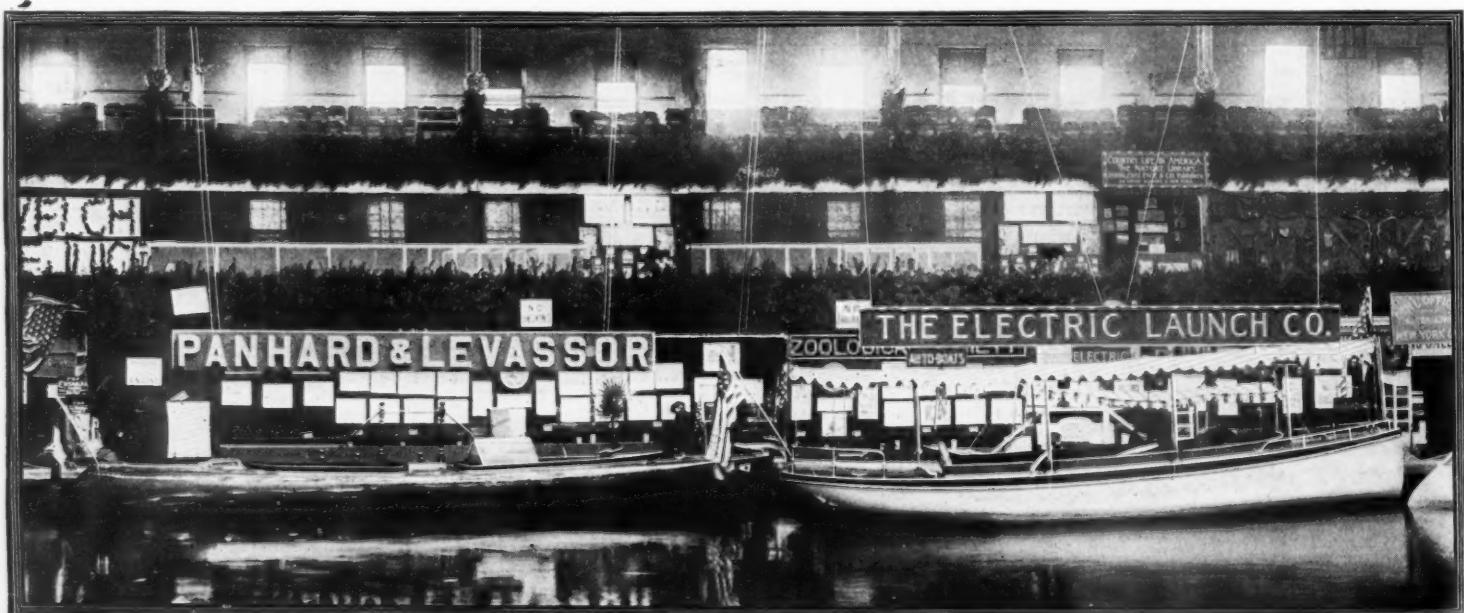
MOTORS SHOWN BY F. A. LA ROCHE

Mich., is shown in the 3 and 10-horsepower sizes, a very plain, simple and cleanly designed motor with all parts ground to fit.

In the way of a kerosene motor the Mietz & Weiss motor, of New York, well known in the past in stationary work, is shown in marine form, with special base, reversing gear, etc. This motor will interest the many who have serious objections to gasoline as a shipmate.

Heretofore the Truscott Boat Mfg. Co. has been a conspicuous exhibitor at these shows, but this year the company makes a modest yet interesting exhibit of engines and boat models. The engines include a four-cylinder four-cycle, embracing the good features of both the automobile and marine motor, inasmuch as, for the hard work it has to do as a marine motor, it is made somewhat heavier than the ordinary automobile motor but much lighter than marine motors are usually made. It is rated at 50-horsepower and will see service in South America. The valves are on the starboard side and easily reached by means of disconnecting an ordinary union. The intake pipe is through a heater, through which the exhaust passes. This not only heats the inflowing gas but reduces the number of pipes and thereby gives the motor a neat appearance.

The Isham Co., the Cushman, and several others exhibiting at the Herald Square exhibition hall last week have transferred small parts of their exhibits to the garden.



THE PANHARD &amp; LEVASSOR BOAT

MOTOR AGE

THE ELECTRIC LAUNCH CO.'S DISPLAY

# MOTORING NEWS FROM EUROPE

## SEVERE ON GERMAN MOTORISTS

A serious clash has occurred between the city administration of Frankfort-on-the-Main, Germany, and the automobile club, automobile dealers and owners of the city. The city council considers that a touring car is a luxury and deserving of an extra tax. Therefore a proposition was introduced to assess all automobiles, which are not for commercial use, 200 marks, or \$50, per year. There are only seventy-seven automobiles in Frankfort which could come under the taxation regulation.

If Frankfort automobilists are rightly up in arms, and all through Germany there is now something like an uprising. The police, local authorities and courts have become exceedingly severe and show a disposition to make it as unpleasant as possible for offenders.

The situation has become so alarming that the trade papers, and the few dailies which side with the motorists, have taken up the matter, not only in publishing short notes but in running columns of editorials and suggesting that the automobile clubs through the empire use their influence to remedy the situation. In several instances the trade papers criticize the clubs, saying they occupy themselves too much with good times rather than with work.

What the outcome will be cannot be foretold, but it is likely that the manufacturers will find it necessary to address a petition to the government, as the present condition of affairs is beginning to react upon the trade in general.

## CHARLEY VERSUS LAMBERJACK

M. Charley, the Mercedes agent, returned to Paris February 19 and was almost mobbed by the representatives of trade and daily papers who wanted to know all about W. K. Vanderbilt's record. Only a few hours before Lamberjack had written his impressions about Florida and in a sarcastic vein gave the impression that every alleged record established on the Ormond course was not correct. M. Charley not only repudiated these statements, but stated that instead of being astonished at the fast times made on the Ormond course, one should be prepared to hear about still more remarkable performances. "It is the ideal racing course for great speed, not to be found elsewhere. Imagine a straight line, 50 kilometers long, as flat and even as a ruler, hard as a billiard table, upon which neither vehicle nor horse shoe traces can be found after they have gone over it. Of course the times made are astounding, especially with the 60-horsepower Mercedes, but don't forget that these are new machines and not last year's cars. I believe that the Ormond race course is at least 10 per cent faster than the Dourdan road, for while we could not use more than twenty-nine teeth on the small pinion on the Dourdan road, it was an easy matter to use thirty-two teeth in Florida. This is a strong argument in favor of the American speedway."

## ITALIAN MOTOR CYCLE EVENT

The motor cycle road race, from Milan to Nice and back, arranged by the *Gazetta dello Sport*, of Milan, had to be stopped at Nice, owing to the inclement weather. Sixty of the eighty-seven riders who entered, started, and motor cycles made by almost every important

European manufacturer, were represented, while among the contestants were many well known continental drivers. The run from Milan to Nice was made in four stages, and forty-four of the starters reached the French city within the time limit. On the third day, a 500-meter hill-climbing contest took place at Oneglia. Only 32 yards were allowed for the start. Tamagni, on a Marchand, was first, covering the distance in :59½. Brambilla, on a Turkheimer, was second in 1:02½, and Cerizza, on a Stuechi, secured this place in 1:02¾.

The Peugeot, Zedel and Turkheimer motor cycles were awarded the three special prizes, while gold medals were given to the Adler, All-right, Dei, Motosacoche, Stuechi and Wanderer machines.

## LICENSING FRENCH OPERATORS

The conclusions of the French parliamentary commission, concerning the changes that are to be made by the service des mines in the issuance of automobile operating permits are interesting.

The commission urges more severity in the examinations and more care when candidates are being examined; that no certificates be



MOTOR AGE

ON THE MILAN-NICE ROUTE

issued to anyone under 18 years; that candidates undergo an examination of the eyes. When a "certificate of capacity" has been granted after a first examination, it is suggested that it ought to apply for automobiles of a limited power, while after a second examination, the certificate could be changed to cover automobiles of any power. Special cars, such as racing machines, ought to be driven by those specially authorized to handle these particular cars. It is also suggested that motor cycle drivers may be exempted.

## HAS MANY PROMINENT MEMBERS

The yachting committee of the Automobile Club of France comprises forty-nine members. The honorary president is Vice-Admiral Bonie, the president is Henri Menier, and the three vice-presidents are Marquis de Dion, Count de Reope and Camille Blanc. Among the members are such well known automobile manufacturers as C. Clement, E. Delahaye, G. Gobron, E. Mors, A. Peugeot, L. Renault, F. M. Richard, L. Serpollet and E. Voigt. Among other members are Rene de Knyff, O. Rives, G. Prade, H. Desgranges, Marquis de Chasseloup-Loubat, Prince d'Arenberg, Baron de Zuylen.

## CUP RACE DEVELOPMENTS

The matter of securing a course for the British eliminating trials for the Gordon Bennett cup race is now being discussed and the suggestion has been made that the trials be made on the Isle of Man. Lord Raglan, the lieutenant governor, has been approached and, it is thought, views the proposition favorably. So far as the highway boards of the island are concerned, no obstacle will be placed in the way of the trials being decided upon the roads under their jurisdiction. Many of the roads are fairly wide and generally their surface is good. In many places they are hilly, but there are plenty of level stretches and a good 60-mile course will easily be available. Secretary J. W. Orde, of the Automobile Club of Great Britain and Ireland, suggests that Douglas would be a good starting place. The trials will take place in May. Fourteen cars have been entered, which is ten more than were entered last year.

Although part of the Taunus is covered with 2 feet of snow, many prospective drivers in the international race are getting familiar with it and at the same time test their new cars. Jeannatzy is reported to have gone over the course over a dozen times within a month, while Baron de Caters, Augieres, Barberoux, de Knyff, Hautvast, Jarrott and Baron de Crawhez have made frequent trips to Germany to become well acquainted with the dangerous road. "It will be a brake test, more than anything else," said a French driver, "because there are so many places where the brakes will positively have to be applied unless one wishes to run the chances of accidents."

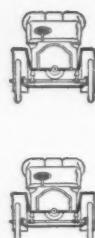
According to a Paris paper, the German government recently required that the course of the Taunus road be somewhat changed between Oberursel and Homburg, owing to the dangerous nature of this section. It was decided that the road pass through the village of Gluckenstenweg and Dornhilzhausen.

Theodor Dreher of Vienna, has taken an option on one of the three Austrian Daimler racing cars which are to take part in the race. Several options are reported to have been received by enthusiastic German and French automobilists on racing cars which will compete in the trial races.

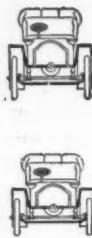
## GERMANY'S FIRST RACES

The first motor boat races, to be run in Germany, will take place June 25, during the week of the Kiel regatta. The motor boat events are arranged by the Automobile Club of Germany and entries for the races should be sent to the secretary of the club at Berlin up to June 1. The craft will be divided into eight classes: Motor boats measuring from 78 to 98 feet, with unlimited power; boats from 47 to 70 feet, with unlimited power; boats from 47 to 70 feet, with a maximum of 100-horsepower; boats from 31 to 47 feet, with unlimited power; boats from 31 to 47 feet, with a maximum of 50-horsepower; boats from 25 to 31 feet, with a maximum of 30-horsepower; boats 25 feet or less, with 16-horsepower, and boats 25 feet or less, with a maximum of 6-horsepower.

The boats of the first three classes will cover a course about 37½ miles long; those belonging to the two following classes will cover one about 22 miles long.



## THE READERS' CLEARING HOUSE



### CALCULATING SPEED RATIOS

Milwaukee, Wis.—Editor MOTOR AGE—Will you kindly explain the method of determining the ratio of speed between the motor and the driving wheels of an automobile to obtain a certain road speed in miles per hour when the speed of the motor is known?—F. G.

First determine the number of revolutions of the road wheel necessary to make the given number of miles in an hour. Reduce this to the terms of minutes by dividing by sixty. The ratio of this number to the number of revolutions of the motor shaft would hence be the speed ratio of transmission and capable of reduction to any desired terms. For a simple example take a machine with a single reduction of speed, driving straight from motor shaft to rear wheels. Suppose its motor runs at 900 revolutions normally, its road wheels are 30 inches in diameter and it is desired to gear it to 30 miles an hour. Thirty miles an hour equals 1,900,800 inches or 31,680 inches a minute. The circumference of a 30-inch wheel is 94.24 inches. Hence 336 revolutions a minute would be required to accomplish the required speed. The speed ratio of transmission would then be 900 to 336; or, reduced to simpler terms, two and seven-tenths to one. If the motor shaft sprocket were of ten teeth the road wheel sprocket would be of twenty-seven teeth. Such calculation does not of course include allowance for slippage or other lost motion.

### MOTOR DISPOSITION

Decatur, Mich.—Editor MOTOR AGE—Granted that the shock from the explosion in a gasoline motor is equally expended upon the cylinder head and upon the piston, would it make any difference in the running of an automobile whether the cylinder of a horizontal motor were extended toward the front or toward the rear of the machine? What objection is there to applying the make and break form of ignition, which is used successfully on stationary motors, to automobile motors?—A. E. LAWRENCE.

It is probably the better practice to place the single-cylinder horizontal motor with the cylinder head to the front, for when it is in this position the head is substantially in the middle of the frame and the recoil, to cause vibration, must exert itself against the entire frame and its load. If on the other hand the cylinder head is toward the rear and well back toward the rear axle the recoil may easily cause a vibration which owing to the springs may be repeated at the front end of the car. The make and break form of ignition has been applied successfully to automobiles and is now in use on several high-class machines. Its use seems to be growing.

### THREE-CYLINDER MOTOR

Akron, O.—Editor MOTOR AGE—What bore and stroke would be required in a three-cylinder motor to develop 12 horsepower at 900 revolutions per minute? What should be the compression space? How should the valves be

set so that there would be an impulse every two-thirds of a revolution?—O. J. K.

To develop 12 horsepower the bore and stroke of each cylinder should be  $3\frac{3}{4}$  and  $4\frac{1}{4}$  inches respectively. There are of course other proportions of cylinder bore and stroke to furnish the same power. The compression space in terms of cylinder diameter and length should be about one-fourth the bore, or, in the above case  $1\frac{1}{16}$  to  $1\frac{1}{8}$  inches. To give an impulse every two-thirds of a revolution apart with the cranks set at 120 degrees the valve gearing would be set so that the cycles of the three cylinders would follow one another in rotation. Thus the order of the phases in three cylinders A, B and C would be for two revolutions:

A	B	C
Impulse	Compression	Intake
Exhaust	Impulse	Compression
Intake	Exhaust	Impulse
Compression	Intake	Exhaust

### DISPLAYS AT SHOWS

Athens, O.—Editor MOTOR AGE—I am much interested in automobile shows and think them to constitute excellent means for promoting the sale of automobiles. I believe that it would be to the interest of manufacturers exhibiting at shows to display the mechanical features of their cars more fully. It would be well to follow the practice of the French manufacturers at their shows in the exhibition of running gears without bodies, and to also show complete motors and transmission gears driven by external means and with the upper half of each removed to make plain the operation of the valves, gearing, etc.—B. D. HEMPESTED.

This custom is growing rapidly in this country and this year at each of the large national shows the majority of the exhibitors had chassis without bodies, while several had sectional motors running to show the operation. Such exhibits are bound to increase in number each year.

### HORSEPOWER FORMULAS

Topeka, Kan.—Editor MOTOR AGE—I would appreciate the publication of formulas for the determining of motor horsepower.—H. HOBSON.

This matter has been treated several times in MOTOR AGE. The correspondent and others interested in it are referred to the issues of February 4 and 18 of this year and of May 28 of last year. In the article in the latter issue a typographical mistake should be noted, it being the statement that calculations used as examples in the article were based on a mean effective pressure of 33 pounds. This should have read 66 pounds.

### INCREASING COMPRESSION

Winnipeg, Canada—Editor MOTOR AGE—The motor of my car is of  $4\frac{1}{2}$  by  $5\frac{1}{2}$ -inch bore and stroke. The compression pressure is a trifle more than 40 pounds. I wish to increase it.

**EDITOR'S NOTE**—Motor Age has on file many letters from readers to this department. These will be printed as rapidly as space permits.

The compression space is 4 inches in diameter, the piston reaching almost to the commencement of this reduced diameter on its inward stroke. I tried to increase the compression by putting a plate of cast iron on the head of the piston; but only succeeded in obtaining premature ignition. I suppose the piece of iron on the piston became red hot and fired the charge.—A. LOIN.

The cast iron piston would not become hot enough to fire the charge. Other conditions being normal it is probable that the iron plate attached to the top of the piston was too thick, caused by too great an increase in the pressure and hence premature firing. On account of the compression space being of less diameter than the cylinder its volume would be decreased at a greater ratio by the reduction of length. A thinner plate might be tried and the better plan would be to make this of aluminum to prevent increasing the piston weight materially. Before changing the compression space in this manner it might be well to see that there is no leakage past the piston rings. There may be enough compression if there is no loss.

### MOTOR BICYCLE TRANSMISSION

Winchester, Mass.—Editor MOTOR AGE—I am building a small air-cooled motor for a motor bicycle. It is of  $2\frac{1}{2}$ -inch bore and 3-inch stroke. What horsepower should it develop at 1,500 revolutions per minute? What should be the diameter of the rear pulley to give a speed of 20 miles per hour, if the motor pulley is 3 inches in diameter and the bicycle wheels are 28 inches in diameter? Of what metal should the rear pulley be made?—A. W. HAWES.

The motor should develop from  $1\frac{3}{4}$  to 2 horsepower. To give a road speed of 20 miles an hour with the engine running at 1,500 revolutions the rear pulley should be  $18\frac{1}{2}$  inches in diameter. It would be well to make it a little, say an inch, under this so that the desired speed could be obtained without forcing the engine to its highest speed except under difficult conditions; also to allow for a slight loss in belt slippage. The rear pulley should be made of steel.

### PREVENTING FREEZING

Chicago—Editor MOTOR AGE—How can I keep the water in the water circulating system of my car from freezing during short trips on which the motor is not stopped, and without using an anti-freezing solution?—PRESTON RHODES.

It is, of course, always safest to use an anti-freezing solution during cold weather, but for trips on which the motor will be kept constantly running, one may insure against freezing of the water by putting several thicknesses of heavy cardboard or heavy, closely woven cloth, such as flannel, over the front of the radiator, to prevent the passage through it of the draft of air.

### UPHOLSTERING MATERIAL

Cleveland, O.—Editor MOTOR AGE—Is patent leather good material with which to upholster an automobile? I have a retrimming job on hand which calls for a glossy black leather.—A. B. H.

Patent leather makes an excellent appearing job, but like on shoes it is liable to crack without notice. A good enamel leather is more durable and to all intents and purposes looks just as well.

# AUTOMOBILE

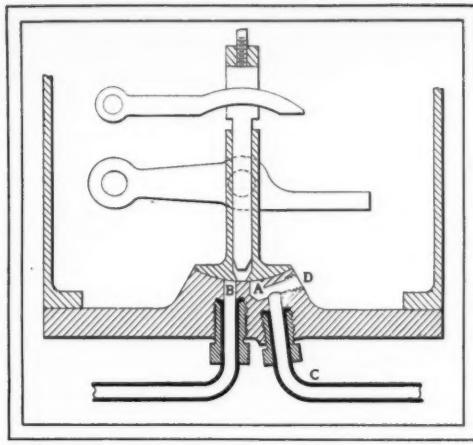
## HILL OILER

The question of lubrication is one of the most interesting of all automobile topics and has been the cause of the introduction of numerous devices and means for rendering lubrication both automatic and reliable. One of the most recently introduced lubricators is the Hill Precision oiler, manufactured by the Steel Ball Co. of Chicago. This oiler was first shown at the Chicago automobile exhibition a few weeks ago where it attracted no little attention. It is claimed by the makers that this oiler will uniformly feed exact quantities of oil to each bearing, regardless of the resistance, or of the varying resistance, in the different delivery tubes; that it will feed only when the machinery is in motion; that it will not leak oil, whether the machinery is in motion or is standing still; that it will, if desired, feed cylinder oil to the cylinders and common machine oil to all the other bearings, at the same time; that it has no valves or stuffing boxes, yet it will send oil to any required height or distance; that its separate feeds are independently adjustable, and when once set will only vary their respective rates of supply with the varying speed of the motor and that it cannot be thrown out of adjustment.

The sectional diagram indicates the construction of the oil measuring and delivery mechanism. It consists essentially of a rocker bar, hung at its ends by trunnions, working in bearings near the middle of links hung at one end and free at the other. These links serve to hold the lower cylindrical edge of the rocker against its seat. The bar is provided with the desired number of plungers, fitted to slide in corresponding holes. By the rocking movement of the bar the plungers are caused to register alternately with the intake port A and the delivery port B. When in register with the port A the plungers are lifted by cams, each draws in its fixed charge of oil, retaining it until in register with the delivery port B. When this point is reached the cams release the plungers, and these drive the oil into the corresponding delivery tubes, on its way to the bearings.

The apparatus is so constructed that it may feed more than one kind of oil at the same time, if desired. This is especially valuable in the case of internal combustion engines, since an oil suitable for the general bearings is not suitable for the cylinders, and vice versa. To feed as many different kinds of oil as desired it is only necessary to provide separate oil holders, to connect them by pipes, as shown at C, and to plug the corresponding openings D, inside the main oil tank.

The Steel Ball Co. is also preparing to intro-



MOTOR AGE THE HILL LUBRICATOR

duce complete rear axle sets, the distinctive feature of which will be the differential gearing, which is of rather unconventional construction. The gear comprises two pairs of bevel pinions and two spur gears, all of which are mounted on spherical bearings. The bearings include what are termed emergency bearings within the gear, to take the strain in case the main or outer bearing binds. The whole gear is small, light and obviously of few parts. In the rear axle structure the brake shoes, drums and operating mechanism of the brake system will be enclosed in a smooth, spherical steel case containing also the equalizing gear and the sprocket or bevel pinion for the final drive. In using the axle in the manufacture of an automobile it will be necessary only to connect a projecting eye bolt by rod or wire to the brake lever in order to complete the braking apparatus.

By taking out a section of the spherical case, made for the purpose, ready access is had to the mechanism.

## RUCKERT STORAGE BATTERY

G. Rudolph Ruckert, 13 East Thirty-ninth street, New York, makes a specialty of storage batteries intended for ignition purposes. The battery is said to be small for its capacity, to give a vigorous spark when used in connection with any good induction coil, to furnish a constant current and to show no appreciable loss by deterioration while not in use. It is made in several sizes, all with the same construction. The plates in each cell of the 4-volt battery are 5 by 6 inches. The body consists of a sheet of pure lead which is ribbed and punched and filled with "active" material under heavy pressure. The plates are set in hard rubber jars and the top or cover is sealed in place to prevent a jarring out of the liquid. The sealed cells are boxed in a polished oak case with lacquered brass binding posts for the terminals.

# DEVELOPMENT

## LENS MIRRORS

About 8 years ago the Rushmore Dynamo Works, of Plainfield, N. J., had developed the manufacture of the lens mirror for searchlights to such an extent that it became satisfied that it would be wise to abandon the metal reflector entirely. Since that time in the manufacture of marine searchlights it used nothing but the lens mirror. For over 2 years the company has been making lens mirror locomotive headlights and these have been adopted by many railways. Three years ago the company introduced the lens mirror searchlight for automobiles. The rapid growth and popularity of this form of automobile headlight is known to all. The Rushmore company, as pioneer in the construction of such searchlights, has naturally given the subject much consideration. Its own explanation of the advantages of the lens mirror is as follows:

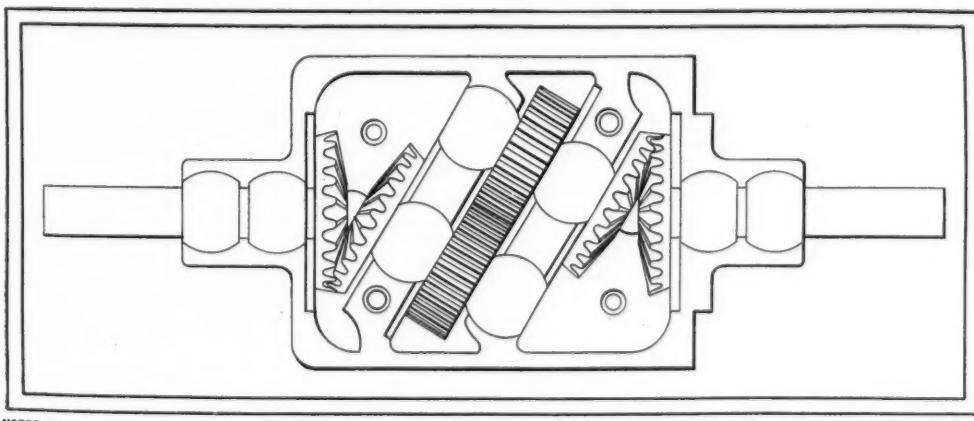
"Fig. 1 shows a common spherical mirror having the glass the same thickness all over; A, B and C represent parallel rays of light entering the mirror, as when it is turned to the sun. The ray A enters the glass near the rim at quite a sharp angle, is refracted, or bent upward and striking the silver backing is reflected back at the same angle as it struck the silver, and passing out of the glass is bent downward and strikes the axial line of mirror at the point D.

"As the ray A enters the glass it is not refracted at the same angle as that at which it struck the glass, but as the sine of the angle, which is very much greater and thus it strikes the axial line at a point very much nearer the lens than do the lines B and E, which strike the glass at much wider angles, and thus it will be seen that a common hollow mirror has no true focal point and a gas flame or other light will not give a parallel beam, but only a lot of scattering rays. This scattering effect is known as spherical aberration and it is overcome in the lens mirror, as shown in Fig. 2.

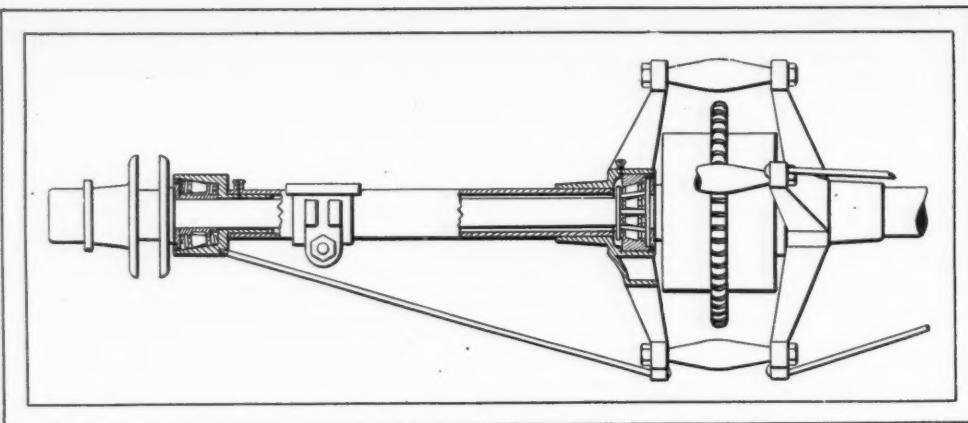
"Here it is seen that the front curve of the lens is much deeper than the rear curve, so that the glass is very thin at the centre and thick at the edge and that the front and back surfaces are at always changing angles to each other. The ray of light A is here seen to enter the front surface, where it is bent upward and strikes the silvered rear surface at a much less angle than in Fig. 1 and returns to the front surface at nearly the same angle as that at which it entered the glass and is again refracted and strikes the axial line at the point D. The rays B and C in passing through the glass are likewise refracted and reflected and each arrive at the same point D as the ray A and thus such a mirror when held to the sun makes the most powerful burning glass that can be produced.

"It will readily be seen that when a light is placed at the point D in Fig. 2 the rays that strike the mirror will all be projected in a parallel beam with little or no scattering. In the case of the 8-inch Rushmore lens mirror, the flame is placed at the focal point, which is just 4 inches from the center of the lens, and as the lens is about 2 inches deep at the center, it will be seen that the flame is actually but 2 inches from the front line of the mirror and to all intents and purposes the mirror is of but 2-inch focus.

"A simple refracting lens 8 inches in diam-



MOTOR AGE THE HILL DIFFERENTIAL GEAR



MOTOR AGE

eter could not well be made over 1 inch thick at the center and it would then have a focus of at least 12 inches, that is to say, the light would have to be placed a foot away to get any beam at all, just six times as far away as with the lens mirror of the same diameter, and catching almost none of the light of the flame and making a lamp that looks more like a gun than anything else.

"The lenses are made of the best optical glass, annealed in the best manner and are unaffected by the flame, the heat of which is much less than that of the arc light used in the electric searchlights. The silver backing on the lens is chemically deposited in a layer so thin that if held to the light one may see through it and it gives the glass a deep blue color, though if looked at with the light from the rear it appears as a common mirror.

"As soon as the thin film of silver has formed, the lens is immediately placed in an electro-plating bath and given a thin coating of pure platinum. As silver expands with heat at a very different rate from glass it would instantly peel off if of appreciable thickness with the slightest change in temperature, and thus common methods of silvering cannot be used with success. Platipum has exactly the same ratio of expansion as glass and thus holds the fine coating of silver in place. This bi-metallic coating is one of the secrets of the success of our lens mirror and is subject to patents now pending. The platinum coating adds greatly to the cost but the results fully justify the outlay."

#### TIMKEN ROLLER BEARINGS

Anti-friction bearings have become almost universal on automobiles. Roller bearings were made common by the automobile. The bearing made by the Timken Roller Bearing Axe Co., of Canton, O., has for its most important feature the conical or tapered rollers and cones. The action, owing to this taper, under all conditions and strains is claimed to be a rolling motion. End thrust is also taken care of by the conical or tapered rollers.

Each cone has two ribs that engage the grooves in the rollers. These ribs prevent the rollers from twisting or turning crosswise on the cones, retaining them in their proper positions and making possible the use of solid rollers. The end thrust is sustained by the grooved ends or surfaces of the rollers pressing against the ribs on the cones, and as they revolve on the ribs and do not slide, the end thrust friction is reduced.

Wear in tapered rollers can be taken up by forcing the cone with its set of rollers farther into the box or raceway, thus insuring a snug fit and long life to the bearings. The adjust-

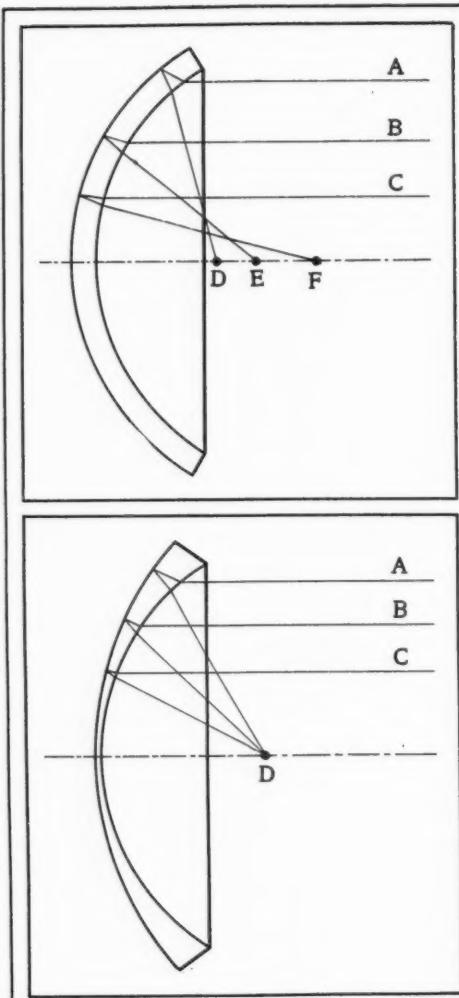
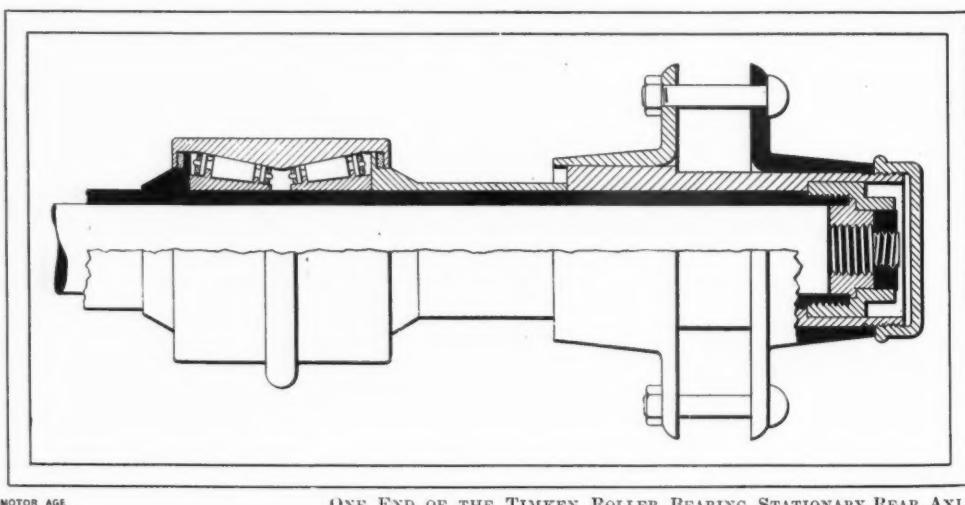
ment in the Timken bearings is positive. The adjustment cannot very well be made too tight, because the axle nut jams against the shoulder of the spindle. If at any time the bearing wears so that the adjustment is loose, a thin steel washer is inserted in the recessed face of the axle nut, thereby advancing the cone and taking up the wear. All bearings are made of machinery steel, case-hardened and ground. A dust-proof device is used to retain oil and exclude foreign matter.

The box of the hub is machined from the solid bar, case-hardened and ground. The flanges are made of stamped steel, the rear one being brazed to the box. The stamped steel artillery hub is lighter and neater than a malleable or cast iron hub, and it is shorter over all. Brass hub caps are furnished on all hubs, and the steering knuckle bolts are made extra strong and work in heavy bronze bushings. A cotter pin is inserted in the bolt underneath the nut. The steering knuckles are furnished either with square or round stubs, and also with solid or tubular axle part to the track desired.

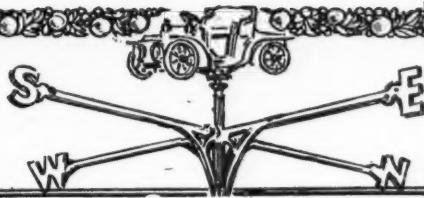
Divided and solid rear live axles are furnished. The divided axle is trussed front and bottom and is constructed to stand the rough usage and hard wear to which the rear axles of automobiles are subject. There are tapered roller bearings at four points. Key-seated artillery hubs are regularly fitted, with brakes when specified.

The solid rear live axle is made of cold drawn axle steel extending unbroken from wheel to wheel. The tubing engaging one side of the compensating gear is made of cold drawn seamless tubing. A bearing is placed under each spring. The box or cup is machined out of the solid bar, and grooved on the outside, having the spring seat casting and reach or body bar lug immovably clipped about it. The collar against which the inner cone impinges is brazed on the shaft of the tubing, the outer collar being loose with a loose sleeve intervening between it and the hub. As the nut forces the hub inward, the hub forces the sleeve inward against the loose collar and thus makes the adjustment.

Both styles of rear axles are made to any track desired. In special cases only the cone, bearings, collars with spring seat attached are furnished. They can be made in various sizes for rear divided axles, bevel gear drive axles, intermission shaft and special artillery hubs. For bevel gear drive axle, these bearings are desirable because of their tapered construction, the side thrust of the gear being taken care of as well as the car weight.

MOTOR AGE  
LENS MIRRORS—FIG. 1, SHOWING THE EFFECT OF A COMMON SPHERICAL MIRROR  
LENS MIRRORS—FIG. 2, SHOWING THE EFFECT OF A LENS MIRRORMOTOR AGE  
ONE END OF THE TIMKEN ROLLER BEARING STATIONARY REAR AXLE

# FROM THE



# FOUR WINDS

Arthur Wright, of Stockton, Cal., will handle the Rambler exclusively this year.

Frank P. Prial, former publisher of the Wheel, is to start a new automobile and power boat paper with John J. Prial as business manager.

An order has been received by the E. R. Thomas Motor Co. to build a special Thomasine for a member of one of the royal families who will visit the world's fair at St. Louis next May.

The engineering students of McGill university, Montreal, Canada, are constructing a gasoline automobile. The motor is 12-horsepower, and the car will be upholstered in scarlet and white, the colors of the university.

An automobile and motor cycle show will be held in Fitzhugh hall, Rochester, N. Y., from March 20 to 26. The automobiles will occupy the main floor, while the galleries will be devoted to motor cycles and bicycles.

Cissac, a French motor cyclist, recently broke the world's indoor mile record, covering the distance in 57 seconds; he also covered 5,000 meters—over 3 miles—in 3:01½. The records were made on an 18-horsepower machine.

At the last Berlin automobile show there were eighty-six exhibitors, which was then record for Germany. Up to February 14, a month before the opening of the Frankfort show, 140 applications for space had been received.

The Tippecanoe County Agricultural Association will make automobile races a feature of its fair at Lafayette, Ind., this year. The automobile races will be held on Tuesday, as the track will then be in good condition.

A number of German papers are greatly worried over the announcement that Madam du Gast is to compete in the German eliminating trials, not because they would rather see a German woman in her place, but for the fact that if an accident should befall her people would be wrought up and would claim the organizers had no business to allow a woman in the race.

The Utah Automobile Co., of Salt Lake City, Utah, is building a two-story garage, 45 by 100 feet, on Market street. The building will be of pressed brick and cut stone and will be completed about April 1. It will cost \$7,000. L. C. Snow is president and manager of the company, and W. L. Pickard, Jr., is secretary and treasurer. Salt Lake now has about forty motor cars.

A Paris paper says that the latest fad of wealthy Americans, after landing at Havre or Cherbourg, is to continue the trip to Paris in automobiles. The latest instance was that of C. M. Schwab and Mr. and Mrs. Kessler. Henry Fournier was on hand with a 60 horsepower Mercedes car and took the Kesslers, while Charron, driving Schwab's eight-cylinder C. G. V., took him to Paris.

Baron de Caters, the Belgian operator, was elected alderman in the village where he resides.

The motorists of Indianapolis, Ind., are already preparing for an automobile race meet in that city Decoration day. Carl Fisher is the prime mover in organizing the meet.

The first Japanese automobile transportation company has been organized at Nagasaki. The capital of the company is \$17,500 and the distance of the road which the omnibuses have to cover is about 5 miles.

At a meeting of the automobile dealers of Minneapolis, Minn., last week the following officers of the Automobile Dealers' Association were elected: President, A. W. Strong; vice-president, H. E. Pence; secretary, W. T. Walker; treasurer, L. H. Fawkes.

The Fort Wayne, Ind., automobile club will petition the city council to have the ordinance regulating the driving of automobiles over the street changed so that tail lights will not be required. The club has no objections to other parts of the ordinance governing automobiles.

At the recent show in Turin, Italy, there were on exhibition sixty-six automobiles, three motor boats, 110 motor cycles and 125 bicycles. The value of the exhibit was placed at about \$300,000. About a hundred motor cars and 200 motor cycles were sold, according to report.

The membership of the German Motor Cycle Rider's Association has grown from fewer than 100 members, June 15, 1903, to 1,650 on the first day of this year. The Automobile Club of Frankfort, which had 118 members at the end of 1902, gained ninety-six members during 1903.

The Woodruff Automobile Co., of Akron, O., has submitted a proposition to the board of trade of Ashland, O., for the removal of its factory to that place. It manufactures a light gasoline automobile and is desirous of securing larger facilities and increased capital. It is proposed to organize a new company with \$100,000 capital stock.

Another weekly trade paper will enter the field of automobile journalism early in April. Its title will be Motoring and Boating. It will be published in New York. J. P. Holland will be its editor, and Lee Straus, of the American Darracq Automobile Co., now prominent in the promotion of the Virginia Beach race meet, its business manager.

The Automobile Club of Great Britain is endeavoring to eliminate all traces of commercialism and will have no business deals around the club. The action of the club in giving its "patronage" to one of the shows is severely condemned by the majority of the members, one being quoted as saying, "When the club begins to offer its 'patronage' for \$2,500 it is time for gentlemen to get out."

The Day Automobile Co., of Kansas City, Mo., has sold its business to The Automobile Co., and the management of the former will retire from business.

The Tennant Auto-Tire Co. has opened an eastern office at 1900 Broadway, at the corner of Sixty-third street, New York, and has appointed Cornell & Phillips as representatives. A full line of tires will be carried at this office.

Coldwater, Mich., is making the assertion that it is the hottest automobile town on the pike. It has a population of about 7,000—and growing—and there are twenty-four automobiles owned there at the present time. In this assortment there are ten Ramblers, nine Olds, two Wintons, one Knox, one Locomobile and one Cadillac.

An adjustable brazing forge which is fitted with extra powerful double jet burners mounted on a compound swivel in such a manner as to enable the operator to place the burners in any position, is manufactured by the Turner Brass Works, 59 Michigan street, Chicago. It is claimed that the Turner double jet burners generate a temperature of over 3,000 degrees Fahrenheit.

A garage has been opened in Kalamazoo, Mich., by M. E. and C. C. Blood, who have until recently been connected with the Michigan Automobile Co. They will handle the Cadillac, Toledo and the Pope lines. The garage will be known as the Kalamazoo Automobile Agency. A stock company is also being organized to be called the Blood Bros.' Automobile & Machine Co., which will manufacture automobiles, transmissions, etc.

Arthur W. Robinson, English manager of the Locomobile Co. of America, returned to this country recently. He was accompanied by Irving J. Norse, of the London office, and Kenneth N. Blake, who has been on the continent for 3 years in the interests of the Locomobile company. Mr. Blake will stay in America only long enough to devote some study to the new Locomobile models, while Messrs. Robinson and Norse will probably be here permanently, as the London business of the company is now in the hands of Jarrott & Letts, Ltd.

The house of representatives in Ohio amused itself last week by perpetrating a joke. The Jones bill, the object of which is to prevent the use of automobiles outside of municipalities, was the cause of the descent from the grave and serious standpoint usually taken by the house. The bill had been amended so as to prohibit threshing machines from being transported along country roads, and then Jones said the committee had taken liberties with his bill and were poking fun at his measure, which he thought was a solemn and serious matter. The house debated the bill for half an hour, adopted a half-dozen amendments and then referred it to the committee on banks and banking.

# AMERICAN MOTOR LEAGUE

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Potter Building, New York.  
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ROBERT L. STILLSON, Secretary,  
150 Nassau St., New York.  
FREDERICK B. HILL, Treasurer,  
32 Binford St., Boston.

National Headquarters:  
150 Nassau Street, New York



## CHAIRMEN OF NATIONAL COMMITTEES:

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ROAD IMPROVEMENT—R. E. Olds, Lansing, Mich.  
LOCAL ORGANIZATION—Charles F. Potter, Denver, Colo.  
TOURING—W. H. Baker, Buffalo, N. Y.  
TECHNICS—Charles E. Duryea, Reading, Pa.  
MEMBERSHIP—Frank A. Egan, New York, N. Y.  
SIGN BOARDS—John B. Price, Hazleton, Pa.  
RACING—A. G. Batchelder, New York, N. Y.  
PRESS—Joseph Estoclet, Philadelphia, Pa.  
HOTELS—Francis N. Bain, Newburg, N. Y.

## OFFICIAL BULLETIN

### GOOD ROADS IN CONNECTICUT

Hon. James H. MacDonald, state highway commissioner of Connecticut, called at league headquarters last week and his account of the progress of the good roads work in his state filled a very interesting hour. Every town in the state has officially declared in favor of improved highways and filed a petition for state aid under the laws passed for that purpose. The recent convention of American road makers at Hartford was one of the most enthusiastic gatherings that ever came together in the furtherance of a peaceful mission. Delegates were present from all parts of the country and the large attendance from agricultural societies and from farming districts was an eye-opener to the politicians who have been prone to stand aloof from the agitation which began with the wheelmen some 18 years ago and has now taken hold upon the good sense of every man who claims to have any. Commissioner MacDonald lives close to the people of Connecticut and by his plain, practical methods and honest administration has endeared himself to the farmers, and the business men who reap the most immediate benefit from his work.

### ROUTES TO ST. LOUIS

Realizing that St. Louis will be the popular objective point among touring automobilists during the coming summer, the officers of the league are preparing and will shortly issue printed information describing through routes in detail from each principal city in the United States and Canada to the big exposition. For convenience of reference these routes will be divided into three classes, being routes from points east of St. Louis; 2, routes from points west of St. Louis, and 3, branch and connecting routes. All local consuls and consulate officers of the league will be called upon to supply detail notes and memoranda, from which these routes may be accurately recorded in their relation to the particular localities where these officers reside; but this means of information must of course be supplemented by such voluntary aid as will come from the large rank and file of individual members. The league is well equipped to collect and disseminate the sort of information which this undertaking calls for, but the total mileage to be recorded is great and the possibilities of error are many, so that reliable information from every source will be gladly received.

These are mere suggestions of "trunk line" routes from the East. They are being revised,

corrected, extended, amplified and simplified, under the direction of the national committee on touring and all information and corrections respecting these routes or any other important routes leading to St. Louis should be sent to headquarters, 150 Nassau street, New York. There will be many branch routes running from small towns and some from important cities to the main routes and it will be the aim of the committee to complete its work by May 1.

### BOSTON TO ST. LOUIS

1—From Boston via Fitchburg, Gardner, Greenfield, North Adams, Albany, Schenectady, Utica, Syracuse, Rochester, Buffalo, Erie, Cleveland, Norwalk, Fremont, Toledo, Wauseon, Bryan, Butler, Kendallville, Goshen, Elkhart, South Bend, Valparaiso, Chicago, Joliet, Wilmington, Pontiac, Bloomington, Springfield, Litchfield and St. Louis. Total distances from Boston—to Albany, 189 miles; to Buffalo, 500; to Cleveland, 688; to Chicago, 1,116; to St. Louis, 1,420.

2—From Boston via South Framingham, Worcester, Palmer, Springfield, Pittsfield and Albany. Thence by route 1. Total distance about the same.

3—From Boston via Worcester, Springfield,

Hartford, New Haven, New York, Trenton, Philadelphia, Harrisburg, Pittsburgh, Zanesville, Columbus, Springfield, Dayton, Richmond, Indianapolis, Terre Haute, Effingham, Vandalia, St. Louis. Total distances from Boston—to New York 250 miles, Trenton 319, Philadelphia 350, Harrisburg 453, Pittsburgh 709, Zanesville 849, Columbus 904, Dayton 973, Indianapolis 1,081, St. Louis 1,320.

### ROUTES WANTED

The committee is especially in need of information as to the best routes from points north and west of St. Louis, and from points in Kentucky and Tennessee.

### MAPS WANTED

When descriptions of routes are sent in they should be accompanied by maps if practicable and by pen or pencil sketches whenever these will add to the clearness of the written memoranda. Town and county maps are sometimes conveniently at hand and from these a sketch or tracing may be made and the best roads indicated by heavy black or red lines. The sender need not hesitate to add the fullest descriptive notes and information designed to aid the touring stranger.

### BEST HOTELS

The league requests all automobilists to aid its officers in making a list of good hotels, and a list of bad ones. By the term "good hotels" is meant hotels where the accommodations are ample, clean and comfortable, the food palatable and well served and the proprietor honest enough not to treat an automobilist as a vulture treats its prey. Automobilists touring to St. Louis will have special need of this sort of information and the league will welcome all communications that will aid it in making its list of reliable hotels complete. When a hotel is known to be bad, or is for any reason to be avoided, no automobilist need hesitate to report such fact.

### REPAIRS, SUPPLIES, STORAGE

The man who runs his car to St. Louis will have need to look for supplies and perhaps now and then for repairs along the route. The league will be glad to receive the names and addresses of all proprietors of shops, stores and stations where the tourist may obtain supplies and repairs, and where he may have his car safely kept during his stop in town. Such information will be arranged and printed in its proper place and will be placed in the hands of automobilists who attempt the St. Louis trip.

### THE AMERICAN MOTOR LEAGUE

is an organization to promote the interests of all users of motor vehicles; to ascertain, protect and defend their rights; to oppose and prevent the enactment of unreasonable and oppressive laws; to encourage the use of motor vehicles by agitation and instruction; to provide its members with printed routes, maps and guide books by which touring may be facilitated and encouraged; to promote the work of improving the public roads and the erection of proper guide boards, and other signs necessary to guide and warn the users of motor vehicles; to select and appoint official hotels repair shops and supply stations where its members may obtain reliable service at reasonable rates.

### WHO MAY BECOME A MEMBER

"Any man or woman, 18 years of age or over, of good moral character and respectable standing, friendly to the motor vehicle and its interests, shall be eligible to membership."

(Constitution, Article 2, Section 1.)

The League is extending its membership in all parts of the country. We invite all friends of the movement to join and aid in building up a powerful organization.

NO INITIATION FEE. ANNUAL DUES \$2 IN ADVANCE, OR \$3, INCLUDING 1 YEAR'S SUBSCRIPTION TO MOTOR AGE.

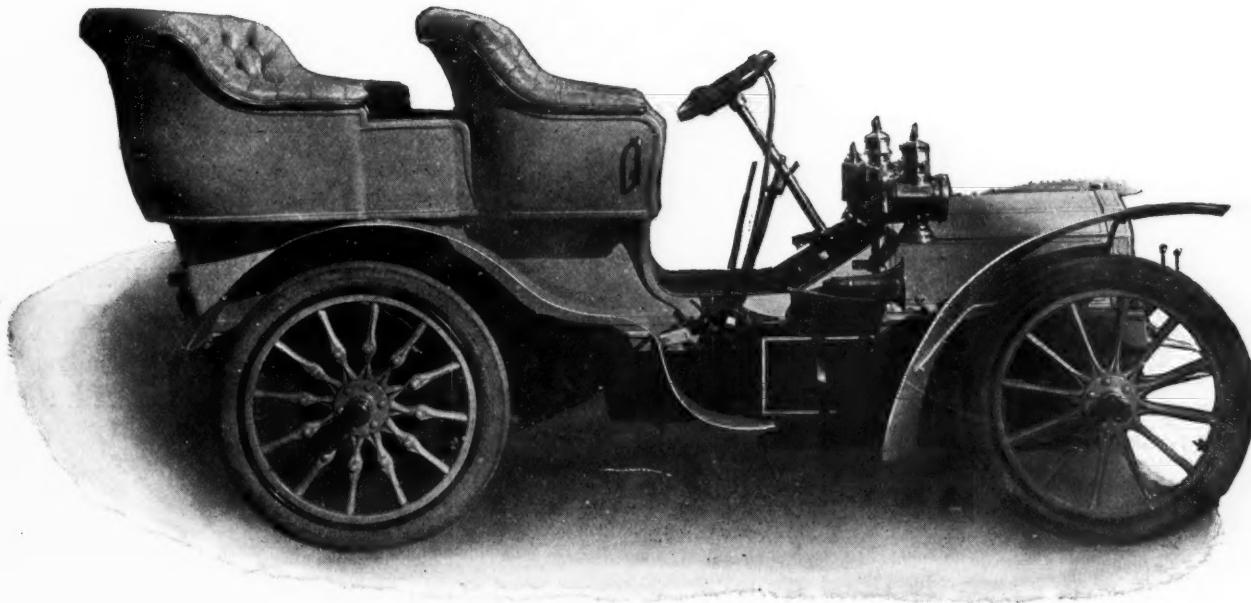
"THE ARISTOCRAT OF AUTO CARS"

# F.I.A.T.

**Automobiles**

AND

**Auto Boats**



16-20 H. P. CAR, WITH "KING OF BELGIANS" BODY.

The highest grade automobile manufactured. Made entirely in our factory at Turin, Italy, one of the best equipped on the continent. Motors 16-20 H. P., 24-30 H. P. and 60 H. P., fitted with four cylinders. All the popular styles of body are carried in stock. Special styles built to order promptly. By pressure on a simple foot pedal ignition is advanced and throttle opened simultaneously, in proportion to speed of engine. No other motor is so simple, no other combines so much speed and power with absolute reliability. Made for those who want the best.



**Hollander & Tangeman**

Licensed Importers Under Selden Patent

5 West 45th Street

NEW YORK CITY

Sole Agents for United States and Canada



## JUST COMPARE

the specifications of the Model "L" with those of the high priced cars; then have a demonstration at our Branches, or one of our selling agents, and you will admit that the

## Rambler

is equal to the best and at about one-half the usual price.

The Model "L" at \$1350 is equipped with a two-cylinder (5"x6") opposed engine, giving 16 horsepower at medium speed, with a range of 3 to 40 miles per hour. Has 84-inch wheel base, wheel steering, one lever control, automatic governor and carbureter, 30-inch wheels and 3½-inch heavy tires, French type of bonnet with honey-comb radiator, roomy tonneau with canopy top and side curtains; 2 brass side oil lamps, tail light, and a large gas headlight; brass tube horn, and a full outfit of tools, oil cans, etc., and needs only gasoline to be ready for immediate use.

Write for our illustrated catalogue, which describes each model in detail. Also for "A Little History" which accounts for some of the doings of our stock carriages.

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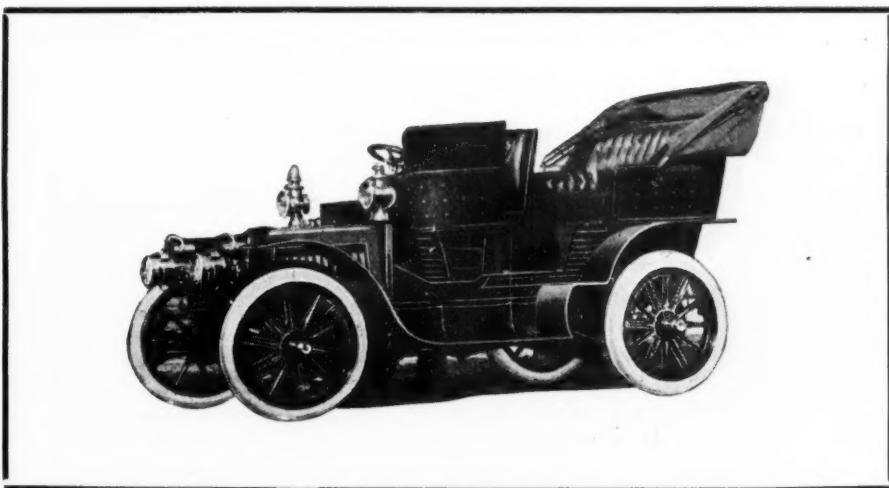
**THOMAS B. JEFFERY & COMPANY**  
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Branch Houses:—145 Columbus Avenue, Boston, Mass. 304 Wabash Avenue, Chicago, Ill.  
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**It's a Case of Preparing NOW or Meeting with  
Disappointment LATER.**

**IF YOU WISH THE BEST**



24-H. P. PANHARD

**WE'LL DEMONSTRATE THE GOOD QUALITIES OF THE**

# **Panhard-Renault S. & M. SIMPLEX Automobiles**



"VINGT ET UN"

**And Our Celebrated**

## **Automobile Boats**

**If You Will Call or Write Us**

# **Smith & Mabley, Inc.**

SEVENTH AVE., Between 37th and 38th Sts.,

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Handsome Auto Views in Our Art Calendar Sent on Receipt of Postage, 10c. No Advertising on it.

## The Car that Has Proved Its Worth

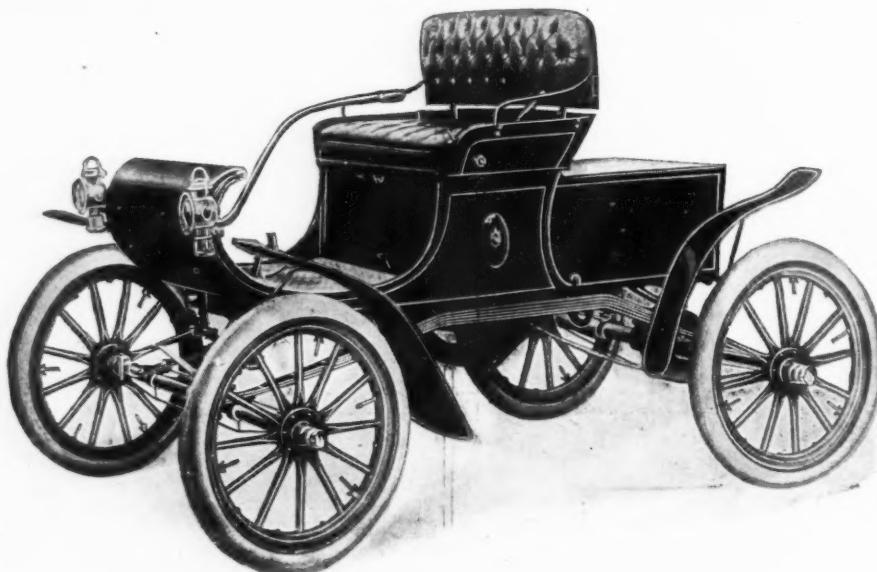
Our display at the New York and Chicago Auto Shows was generally considered in the nature of a surprise. The new type of cars indicated that we have not been resting on our laurels, but have been keeping pace with the advancement of automobile construction.

We wish to emphasize, however, that these new cars do not, nor were they intended to supplant the

At the Mohon-Mela Exposition held in Calcutta, India, in January, the

### Oldsmobile

was awarded the GOLD MEDAL as the best Runabout in India. This was won in competition with machines of French and English make, but, as in the recent British Reliability Trials the pioneer Runabout carried off all honors



# OLDSMOBILE

## Standard Runabout

**PRICE] \$ 650.00**

This light car has proved its merit in every country under the sun. It has won prizes and trophies in every sort of trial. It has survived the supreme test of public favor, and is today the favorite automobile of five continents.

While maintaining its general lines of construction, which experience has shown to be the best adapted to attain mechanical strength and simplicity and meet American road conditions, it has been improved and altered in many essential points, preserving the best of the old, and combining all the merits of the new.

We have selling agents in practically every city of importance in the United States, and foreign agents in every part of the world.

For full information about the Oldsmobile line, see our nearest agent or write direct,

**OLDS MOTOR WORKS**

**1300 Jefferson Ave., - - - Detroit, Mich., U. S. A.**

Member of Association of Licensed Automobile Manufacturers.

# Our Best Advertisement

is the satisfied owner. Every Cadillac buyer is a satisfied customer. The thirty-eight satisfied dealers who sold Cadillacs last year were among the best in the country. That little bunch of dealers absorbed the entire Cadillac product which was available prior to August 1st. The

## 2,100 CADILLACS

which these dealers distributed in every state and territory in the Union has made it possible for us to secure 110 good dealers who have placed orders and specified shipping dates for practically all the machines we can deliver prior to June.

There is no automobile made the equal of the Cadillac at the price of the Cadillac.

## Cadillac Automobile Co.

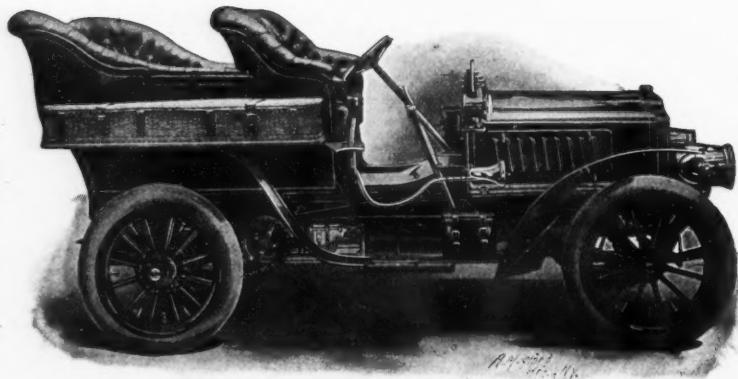
DETROIT,

Members of the Association of Licensed  
Automobile Manufacturers.

MICHIGAN

# Columbia

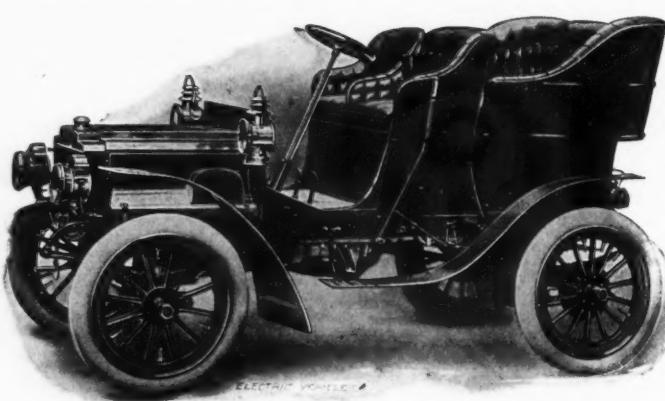
MARK XLII  
TOURING  
CAR



30-35  
HORSEPOWER  
HONEST RATING

This car introduces important new features suggested by a year's experience and perpetuates the best points of the COLUMBIA MARK XLI of Chicago-New York Record and Endurance Run fame. MARK XLII has a 106-inch wheel base and pressed steel frame with the chassis entirely independent of the body. The four-cylinder engine, nominally rated at 30 h. p., but having developed 35 h. p. in actual tests, has mechanically operated inlet and exhaust valves and exclusive improvements in the spark-timing, lubricating and controlling devices. The material of the entire car is so distributed as to give the maximum of strength with the minimum of weight, making it the lightest car of equal power ever built for touring. Price, with standard tonneau body, \$4,000. Canopy top, \$300 extra. Special prices for Aluminum, Limousine or Surrey bodies.

MARK XLIII  
LIGHT  
TONNEAU



12-14  
HORSEPOWER  
HONEST RATING

MARK XLIII has a two-cylinder opposed engine forward in a removable bonnet, bevel gear rear axle drive, sliding gear transmission with three speeds forward and one backward, direct drive on the high gear, and a foot operated friction clutch which is self-compensating for wear. The machine can be run at a speed of thirty miles per hour on the level and a first class hill climber on the high gear. Lubrication is automatic. The carburetor permits use of kerosene in emergencies. Entirely new features in the control system make this the easiest of all gasoline cars to operate. The body is noticeable for its exceedingly handsome lines and convenient disposition of seat room. The tonneau seats are of full carriage size. All materials and workmanship are of the very best and the car is of the highest grade in every detail, great or small. Canopy top, \$200 extra.

A Catalogue of Columbia Gasoline Cars and Electric Pleasure Vehicles will be sent on request; also separate Catalogues of Electric Town Carriages of the coach class and Commercial Vehicles.

**ELECTRIC VEHICLE CO., Hartford, Conn.**

New York Branch: 134-136-138 W. 39th St.

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Member Association of Licensed Automobile Manufacturers.

# STEARNS



STEARNS 24-HORSEPOWER GASOLINE TOURING CAR

Our Policy is **IMPROVEMENT** Not Alteration

Stearns Cars Can Be Seen, Not Heard.

Remember the Record of No. 35 in the  
Endurance Run.

*Write for catalogue and booklet describing the  
Endurance Run and return trip to New York.*

**THE F. B. STEARNS CO.**

Licensed under Selden Patents

Euclid and Lake View Aves.

**Cleveland, U. S. A.**

California Branch: A. P. WORTHINGTON, 331-333 So. Main St., Los Angeles

# TWO NEW AUTOMOBILE TIRES

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*The  
Instantaneously  
Detachable*

## DUNLOP

AND

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*The*  
**HARTFORD  
CLINCHER**

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Introducing an entirely new departure in rim construction. ∴ Its detachable side flanges or beads are removed by the simple loosening of a screw, leaving a flat faced rim, from which the tire can be removed "like slipping a belt off a pulley"—a loose belt at that,

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made under the G & J patents. This tire combines all the excellent qualities of that construction with many improved features of its own, hitherto characteristic only of the foreign makes

---

**THE HARTFORD RUBBER WORKS CO.**

H A R T F O R D ,

BOSTON NEW YORK PHILADELPHIA BUFFALO CLEVELAND DETROIT CHICAGO MINNEAPOLIS DENVER SAN FRANCISCO

CONNECTICUT

# NOTICE

USERS, AGENTS, IMPORTERS, DEALERS AND  
MANUFACTURERS OF

## Gasoline Automobiles

United States Letters Patent No. 549,160, granted to George B. Selden, November 5, 1895, controls broadly all gasoline automobiles which are accepted as commercially practical. Licenses under this patent have been secured from the owners by the following named:—

### M A N U F A C T U R E R S

Electric Vehicle Co.	The J. Stevens Arms & Tool Co.
The Winton Motor Carriage Co.	H. H. Franklin Mfg. Co.
Packard Motor Car Co.	Smith & Mabley, Inc.
Olds Motor Works	The Commercial Motor Co.
Knox Automobile Co.	Berg Automobile Co.
The Haynes-Apperson Co.	Cadillac Automobile Co.
The Autocar Co.	Northern Mfg. Co.
The George N. Pierce Co.	Pope-Robinson Co.
Apperson Bros. Automobile Co.	The Kirk Mfg. Co.
Locomobile Co. of America	Elmore Mfg. Co.
The Peerless Motor Car Co.	E. R. Thomas Motor Co.
Standard Motor Construction Co.	Buffalo Gasoline Motor Co.
Waltham Manufacturing Co.	Pope Manufacturing Co.
Pope Motor Car Co.	The F. B. Stearns Co.
	The Sandusky Automobile Co.
	Crest Manufacturing Co.

### I M P O R T E R S

Smith & Mabley, Inc.	Standard Automobile Co.
Central Automobile Co.	E. B. Gallaher
Alexander Fischer.	Auto Import Co.
Hollander & Tangeman	American Darracq Automobile Co.
Sidney B. Bowman Automobile Co.	Controlled by F. A. La Roche Co.

These manufacturers are pioneers in this industry and have commercialized the gasoline vehicle by many years of development and at great cost. They are the owners of upwards of four hundred United States Patents, covering many of the most important improvements and details of manufacture. Both the basic Selden patent and all other patents owned as aforesaid will be enforced against all infringers.

No other manufacturers or importers than the above are authorized to make or sell gasoline automobiles, and any person making, selling or using such machines made or sold by any unlicensed manufacturer will be liable to prosecution for infringement.

A suit was commenced on Oct. 22d against a dealer, and against a manufacturer infringing United States Letters Patent No. 549,160.

A suit was commenced Nov. 5th, against a purchaser and user of an automobile infringing the same patent.

A suit was commenced December 28th, 1903, against an importer of automobiles infringing the same patent.

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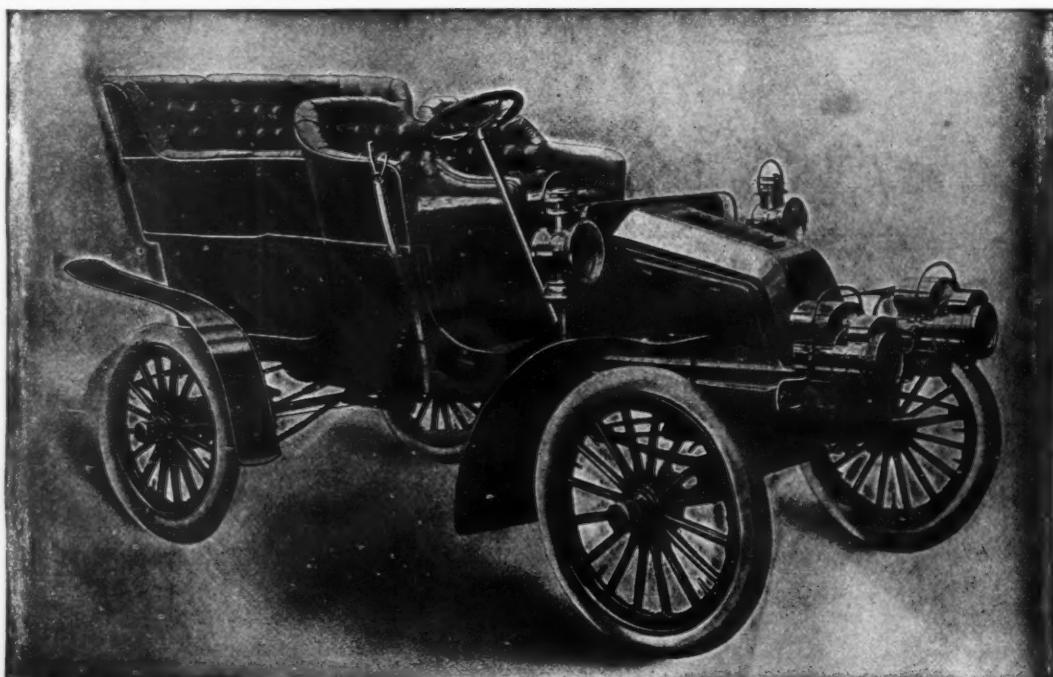
**Association of Licensed Automobile Mfrs.**  
No. 7 EAST 42d STREET, NEW YORK

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You Know This Car! It is the....  
Tried and True

# FREDONIA

which never failed in the severest tests of last season



WE

await your decision relative to our new 2-cylinder car, which constituted an interesting part of our Chicago Show Exhibit. WE think it is the "real thing" and are prepared to show

YOU

**Fredonia Mfg. Co.**

Youngstown, Ohio



CHICAGO AGENT:

Western Automobile Co.,  
1303 Michigan Avenue.

THE  
**THOMAS "FLYER"**  
TOURING CAR

PRICE \$2500

VALUE \$4000



THE QUESTION HEARD  
EVERYWHERE:

Have You  
Seen  
The Thomas  
"Flyer"

CENTER OF ATTRACTION

The Ladies Said: "What a beautiful car; buy me that one."  
The Men Who Know Said: "The best value in the show by \$1000."  
Automobile Makers Said: "It has no equal in design, material or workmanship."

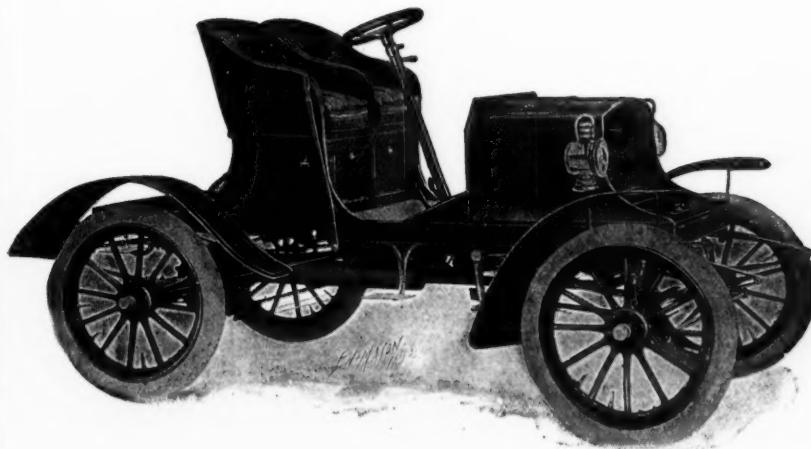
We can take care of a very few more (not many) good agents.  
If interested apply now and order your demonstrator.

**THE E. R. THOMAS MOTOR CO.**  
1202 Niagara Street, BUFFALO, N. Y., U. S. A.

# Premier Air Cooled

## "THE QUALITY CAR"

Weight, 1250 pounds without tonneau,  
Weight, 1400 pounds with tonneau.



HORSE power 16. Four cylinders. Air cooled. Engine under bonnet. Transmission located on counter shaft, mounted on roller bearings. One lever for both speeds. Tonneau detachable. 82-inch wheel base, 32x3½-inch wheels. Inclosed rear axle. MORE HORSE POWER PER HUNDRED POUNDS THAN ANY CAR BUILT IN AMERICA. Simplicity—Speed—Ginger—Our idea of a good motor car. No vibration—full elliptic springs that make our car ride like a Pullman. Speed and power to roar up hills—And if it does need repairs, our engine is the most accessible ever built. We prove our statements to buyers and agents. Write for catalogue.

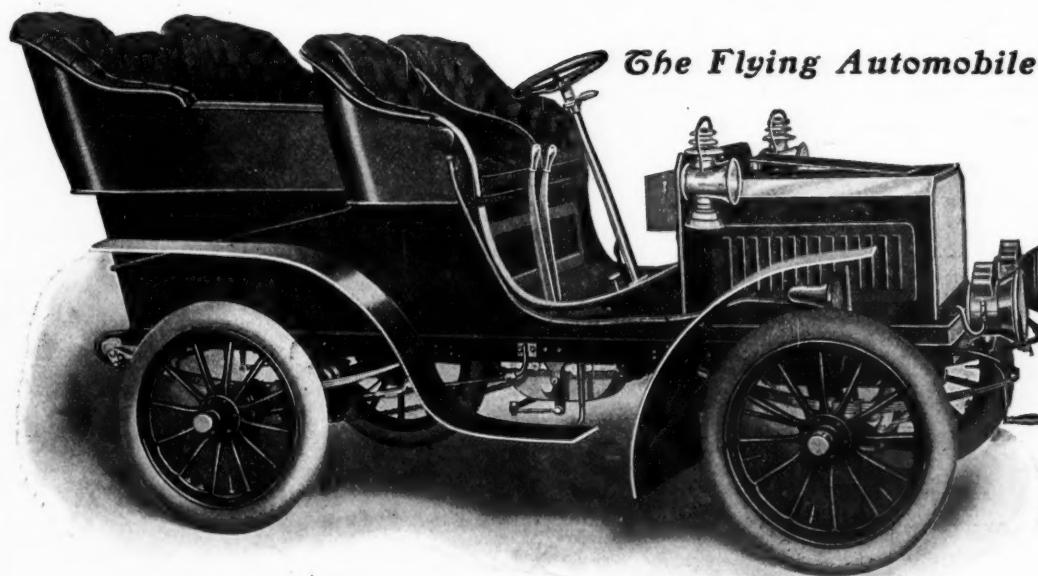
Premier Motor Mfg. Co., Indianapolis, Ind.

\$2,000

AIR-COOLED

\$2,000

## The DUMONT



*The Flying Automobile*

Built to go. Easy riding. Four cylinders. Weight, 1800 lbs. Made to stand ample power. 20 h. p. Over one horse power to each 100 lbs. Its elegance of appointment recommends it to people of quality.

A Good Proposition  
for Agents.

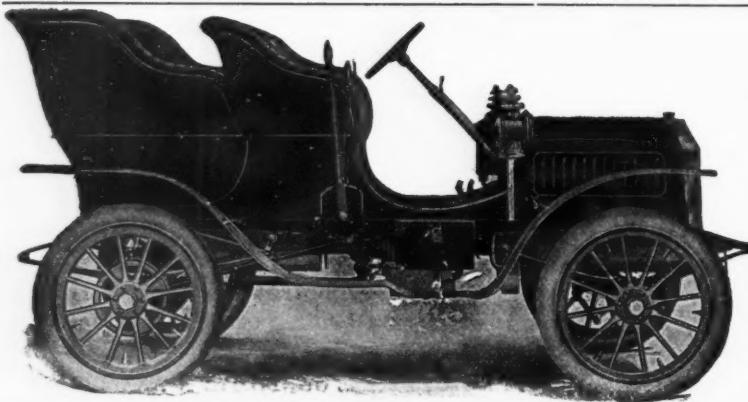
\$2,000

Columbus Motor Vehicle Co.  
COLUMBUS, OHIO.

\$2,000

# The National Line for 1904

CONSISTS OF 14 MODELS



"THEY  
GO  
THE  
ROUTE"



**12 Electrics and**

Runabouts  
Road Wagons  
Stanhopes  
Electrobiles  
Traps, Etc.

Edison, Western or  
Exide Batteries

**2 Gasoline Touring Cars**

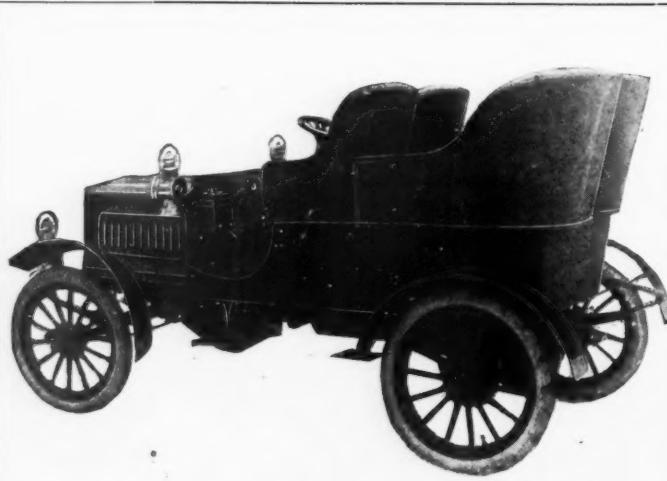
Four Cylinders  
Pressed Steel Frame  
Bevel Gear Drive  
and many other up-to-date features

**This Line**

is a most desirable addition to any dealer's stock. Catalogue and circulars descriptive of our entire line now ready.

Write us now. We want live representatives in unoccupied territory.

**National Motor Vehicle Co., 1200 E. 22d Street  
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## THE *Bates* *Family Car*

**16 HORSEPOWER**

Car Built on Best Mechanical Principle.

Durability and Simplicity our Strongest Points.

Vertical two-cylinder motor. Bevel drive. Direct connective on high speed. One lever control. Side entrance to tonneau. Dust proof locker under rear seats. Front seat divided. Commutator on wind board. All parts easily accessible.

**BATES AUTOMOBILE CO.**  
LANSING, MICHIGAN

# A Great Deal of Power

can be lost in motor cars through an imperfect system of

## Transmission

By the system of transmission used in

# Peerless Direct Drive Motor Cars



Direct  
Drive

a greater percentage of the power generated by the motor is conveyed to the rear axle than by any other system known. You know the result.

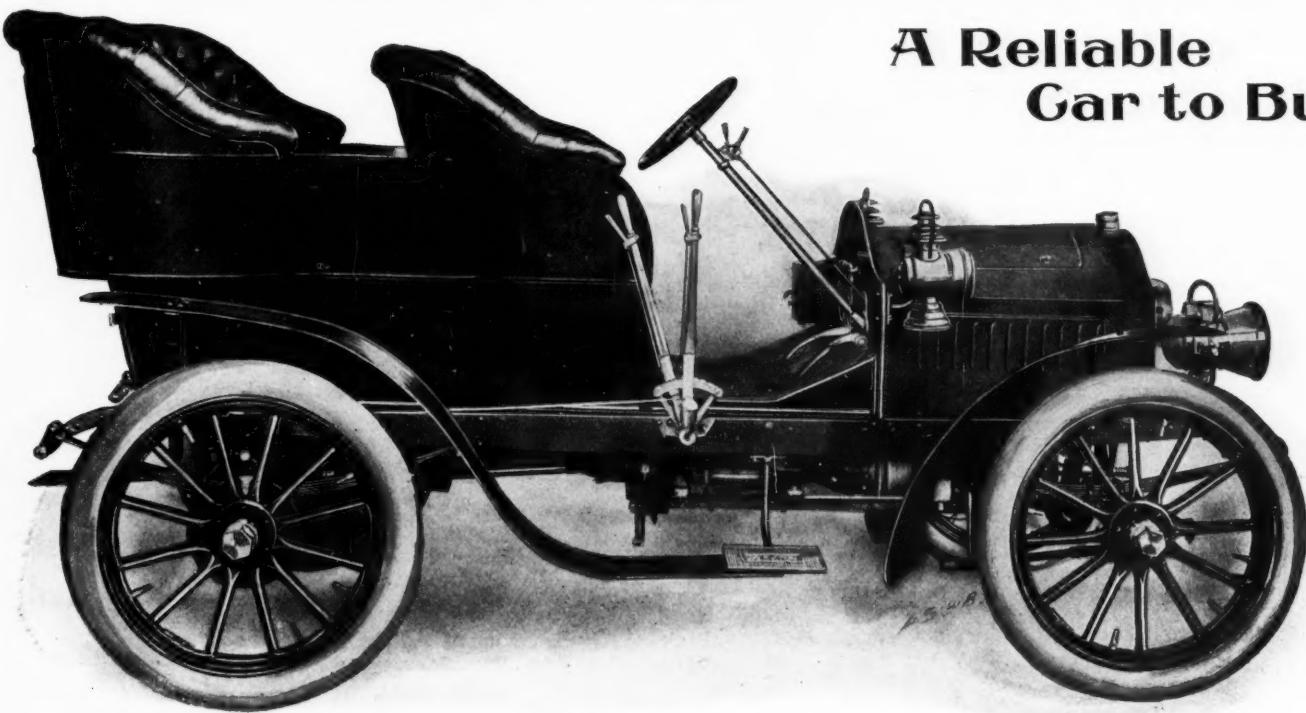
**The Peerless Motor Car Co.**

CLEVELAND, OHIO

Member Association Licensed Automobile Manufacturers

# THE ROYAL TOURIST

**A Reliable  
Car to Buy**

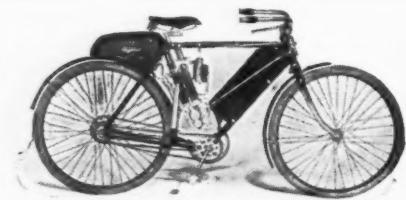


**\$2300**

Model "O" 18 H. P. Aluminum Bodies 10-day Delivery  
**THE ROYAL MOTOR CAR CO., CLEVELAND, O.**

## Rambler, Crescent, Monarch, Imperial Motor Bicycles, for 1904

Unique construction. Simple to operate. Safe, comfortable, speedy.

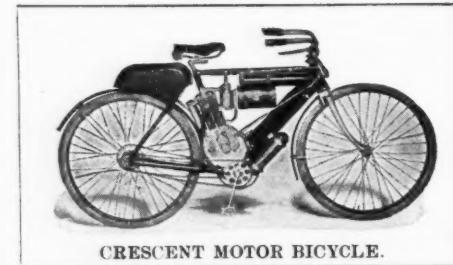


RAMBLER MOTOR BICYCLE.

**Pope  
Product**

**POPE MANUFACTURING CO.**  
WESTERN DEPARTMENT  
CHICAGO, ILL.

**Pope  
Quality**



CRESCENT MOTOR BICYCLE.

4-cycle, high compression, jump spark motor, 1 $\frac{3}{4}$  H. P. with great reserve power.

Absolute one lever control.

Speed 5 to 30 miles per hour.

No mechanical skill required.

**"JUST GET ON AND RIDE"**

**PRICE      \$225**

**Send for Illustrated Catalogue**

*Pope*  
*Hartford*

All the improved  
features of the expen-  
sive touring cars



**Simple Construction  
Easy to Operate  
Ample Speed, Power  
and Carrying Capacity**

Model B. 10 H. P.  
Price \$1200  
Without Tonneau \$1050

Two new masterpieces added to the product of

**POPE  
MANUFACTURING  
CO.**

.HARTFORD, CONN.

Modern Gasoline Cars at Moderate Prices.

A staunch and reliable  
car for all around  
service



6 H. P. Price \$650

*Pope*  
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Complete and Com-  
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for 1904 sent on re-  
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THE LIGHTEST  
THE STRONGEST  
MOST DURABLE  
MOST EFFICIENT  
BEST FINISHED



ABSOLUTELY SAFE  
PERFECTLY CLEAN  
BEST TO RIDE  
MOST ECONOMICAL  
TO KEEP

## THE BAKER ELECTRIC

Attractive in Rich Finish and Design. \* Simply Manipulated. \* Always Satisfactory.  
A Carriage Any Lady Can Drive.

SEND FOR OUR B K CATALOG.  
**THE BAKER MOTOR VEHICLE CO., Cleveland, Ohio**

# CRESTMOBILE

- Ample Power
- Shaft Drive
- No Vibration
- Simplicity
- Thoroughly Practical
- Luxurious Finish
- Tried Reliability



The Crestmobile has won its own reputation by merit. It runs every day in the year, costs little to maintain, sells quickly and pleases users. The Crest factory is large and can deliver promptly. Other Models \$650 to \$1250.

Member of the Association of Licensed Automobile Manufacturers

# CREST MFG. CO., Cambridge, Mass., U.S.A.

*The Locomobile* of detailed information.

**GASOLENE  
TOURING  
CAR**

Equal to the best imported cars in material, workmanship, and finish, but better adapted to American conditions.

**A TRUE SIMPLEX**

TWO Cylinder and Four Cylinder Touring Cars, Front Vertical Motors used exclusively. Prices from \$2,000 upwards. Place your order early and avoid delay in delivery.

**The Locomobile Company of America, Bridgeport, Conn.**

BRANCHES: — NEW YORK, Broadway and 76th St.; PHILADELPHIA, 249 North Broad St.; CHICAGO, 1354 Michigan Ave.; BRIDGEPORT, Factory at Seaside Park; BOSTON, 15 Berkeley St.

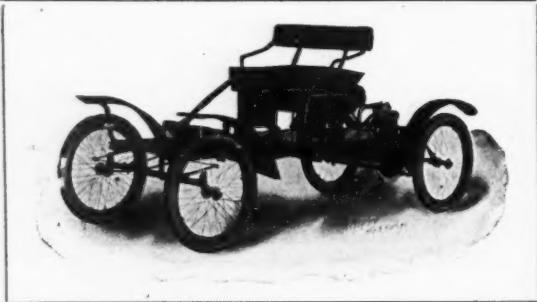
Member Association of Licensed Automobile Manufacturers.

## Seven Million Orient Buckboards

We do not wish to infer that we expect to build quite as many as this during the present season, but if all the people knew how handy this little car would be, and how much time and money it would

save them, we feel sure that even seven million would not supply the demand. In these days of progress transportation is pre-eminently the question of importance, and the Buckboard is particularly designed to transport individuals from one point to another with the greatest possible despatch and the least practical expense. The public appreciate this, and that is why we talk of Buckboards by the million.

Write for handsome new catalogue and agent's terms.



Patented March 10 1903 Aug. 18 1903.

**Price \$425**

**WALTHAM MFG. CO., WALTHAM, MASS.**

Members of the Association of Licensed Automobile Manufacturers



THE "NEW MASON" Model C

We do not claim that **The Mason "Model C"** is a perfect engine, but do ready to back up our affirmation, that it is, from every standpoint,

## THE BEST AUTO ENGINE IN THE WORLD.

Our "Model C" catalogue will tell you all about this engine, and prove interesting to every autoist. It will be a pleasure to mail you a copy. Send postal card for it to-day.

A full line of parts for all Mason Engines will be found at 147 Queen Victoria St., London, England.

**THE MASON REGULATOR COMPANY, - - - 158 Summer Street, BOSTON, MASS.**

Kindly mention this publication in writing.

## "IMPERIAL" Gasoline Automobiles

DOUBLE OPPOSED  
AIR-COOLED MOTOR

ARE ALWAYS READY  
THE HOTTEST DAYS OF SUMMER  
THE COLDEST DAYS OF WINTER

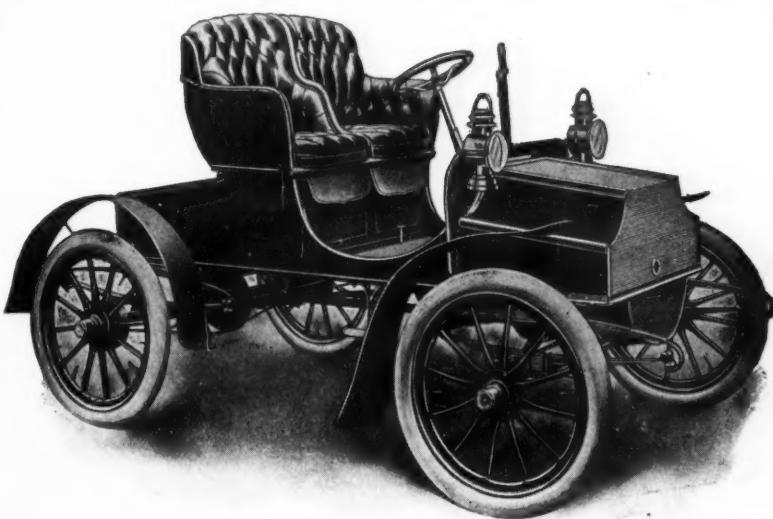
BEVEL GEAR DRIVE  
SLIDING GEAR TRANSMISSION

### WE MANUFACTURE 4 DIFFERENT MODELS

- Model A. Open Runabout
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### HAS ALL THE LATEST IMPROVEMENTS

Our "IMPERIAL" Automobiles are driven by double opposed air-cooled engines (no water, no radiator coils, no pump), placed in front, away from all dirt and dust. All parts accessible by simply lifting the hood. Has bevel gear drive instead of sprocket chain. Sliding gear transmission. Two brakes. Automatic spark timer. Forced feed oiler of large capacity. Tilting steering wheel. Our spring suspension we claim is the most practical and best ever shown on any automobile. Body of handsome design, roomy and comfortable, and with ample room back of seat for carrying a number of parcels. Upholstered in the finest quality of leather.



IMPERIAL MODEL "A"

AGENTS WANTED IN UNOCCUPIED TERRITORY  
BOOKLET ON APPLICATION

**RODGERS & CO., COLUMBUS, OHIO, U. S. A.**

HAVE YOU ORDERED YOUR MACHINE? HAVE YOU SPECIFIED IT FITTED WITH

# Continental Tires

**I**T is in your interest that we urge you to have it fitted with CONTINENTAL TIRES. You will get longer wear and more comfort than from any other make. Don't delay but do it to-day. Send for Gordon Bennett booklet.

The Continental Caoutchouc Company

Emil Grossman, Mgr.

American Office, 298 Broadway, New York  
factory, Hanover



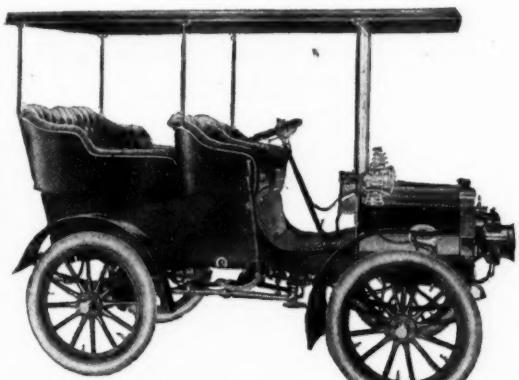
## A Tire with a Reputation

The G. & J. Tire has quality in its construction and years of experience in detachable tire construction back of it.

G&J TIRE CO.

Indianapolis, Ind.

Are  
You  
With  
Us?



A SPRAGUE CANOPY—CONCEALED CURTAINS

# COL. SPRAGUE'S \$100.00 CANOPY

With Concealed Curtains—Weighs About 65 lbs.  
Complete.

We also make a \$200 Canopy.  
We make park canopies for  
ladies' use on runabouts and  
light touring cars. Cape cart  
covers (or three bow tops).

The Sprague Umbrella Co. NORWALK  
OHIO

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### PRESSED STEEL FRAMES

Made of cold rolled steel and supplied with or without forgings, assembled or as frame members. Send for descriptive circular.

### AXLES

Front—tubular and forged, with steering pivots and cross connection; rear—chain or bevel gear drive, with ball, roller or plain bearings.

### STANDARD TRUCK PARTS

Including front axle, steering gear, suspension and transmission gear, hub and countershaft brakes, and electric motive power.

### OTHER PRODUCTS

We also make "Diamond" chains, "High Duty" steel balls, change and transmission gears, pressed steel and malleable hubs, engine cranks and mufflers.

CATALOG NO. 1 DESCRIBES LIGHT PARTS  
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FEDERAL MANUFACTURING COMPANY—CLEVELAND, OHIO

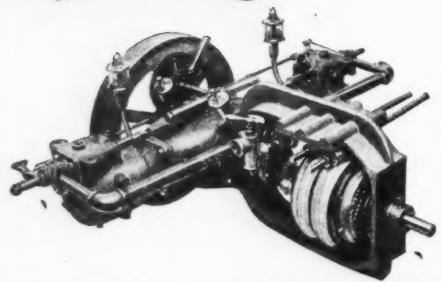
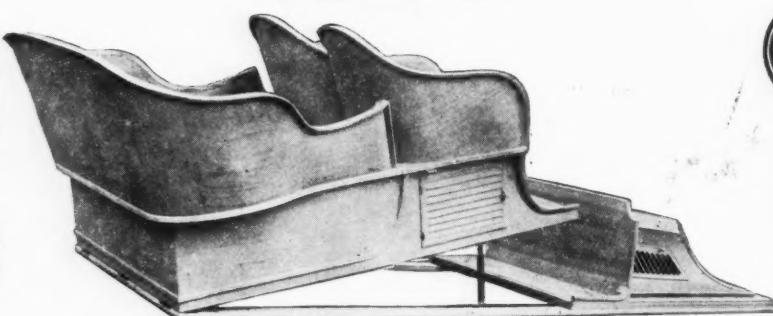
SELLING AGENT—HAYDEN EAMES, AMERICAN TRUST BLDG.—CLEVELAND



WHEN VISITING

# The World's Fair

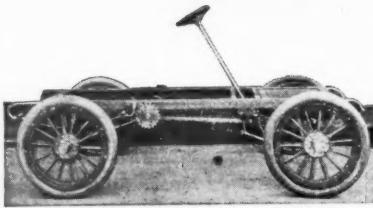
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We manufacture and sell all the parts  
for Automobiles. Our new prices will  
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J. H. NEUSTADT CO.

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Should  
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part of  
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Automobile  
Equipment.

**Pictures** As you see them  
No Guess Work while you see them  
at the desired moment

Ask your dealer to show you our goods or write to  
**The Folmer & Schwing  
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NEW YORK

The GRAFLEX Camera is used and recommended by the photograph  
staff of the MOTOR AGE.

AUTOMOBILE AXLES COMPLETE

With Hyatt Roller Bearings

ARTILLERY AND WIRE WHEELS For Any  
WEIGHT VEHICLE  
ALL SIZES RIMS FOR ANY TIRE

Every Clincher Rim is **INSPECTED** by Clincher Tire Association, bears  
their approval stamp and ONLY on such rims will tires be guaranteed.

**WESTON-MOTT CO., - - Utica, N. Y.**  
Established 1884.

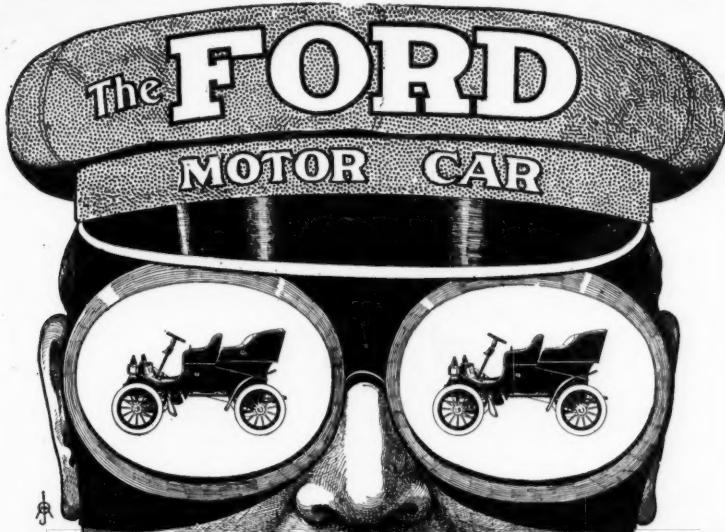
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OIL TEMPERED. HAND FITTED.



ALL KINDS FOR AUTOMOBILES

THE CLEVELAND-CANTON SPRING CO., Canton, Ohio



## In the eyes of the Chauffeur

is the most satisfactory Automobile made for every-day service. The two cylinder (opposed) motor gives 8 actual horse power, and eliminates the vibration so noticeable in other machines. The body is luxurious and comfortable and can be removed from the chassis by loosening six bolts.

**Price with Tonneau, \$900.00  
As a Runabout, \* 800.00**

Standard equipment includes 3-inch heavy double tube tires.

We agree to assume all responsibility in any action the TRUST may take regarding alleged infringement of the Selden Patent to prevent you from buying the Ford—THE CAR OF SATISFACTION.

**The Ford Keeps the Price Down.** You have to pay the Trust \$1500 for a tonneau car with a double opposed motor. The Ford is the pioneer of this type machine and it is the lowest priced automobile of its class in the world. Write for illustrated catalogue and name of nearest agent.

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If  
You Want  
a Car

So simple a child can run it  
So strong it will stand any kind of usage  
So powerful it will climb any hill  
So comfortable you can ride in it all day without  
being tired  
So well built it will stay out of the repair shop

**Get the Dawson** PRICE \$1,500

16 B. H. P., two-cylinder upright motor, spur gear and positive clutch transmission, chain drive—no side levers, long wheel base—seats as roomy and comfortable as a Davenport, high grade, honest work and material, superb finish.

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Canal and Washington Streets, CHICAGO, ILL.

## Some People

are so superstitious that they consider it unlucky to sleep three in a bed, but everyone concedes that the dealer who secures the MITCHELL is lucky beyond all others.

Have you been looking for a light car with 3 forward speeds? If you have, write us.

Do you believe in the multi-cylinder engine? If so, write us.

Have you an AIR-COOLED car in your line? If not, write us.

Do you consider automatic lubrication desirable? If so, write us.

If you desire more reasons for writing to us, write us and we will write you reasons that are right.

## Mitchell Motor Car Co.

**Maker Motor Cars and  
Motorcycles**

**3 Packard Ave., Racine, Wis.**

## THE CHAINLESS **WOLVERINE** A Live Proposition For Live Agents

### A FEW OF ITS CHARACTERISTICS ARE

Bevel gear drive with sliding gear transmission, three speeds ahead and reverse.  
Speed range from 6 to 35 miles an hour.  
Long wheel base.  
Large, high back tonneau.  
Finest leather upholstering.  
Space under tonneau floor to carry extra tire, rain covers, etc.  
Brakes positive and operated by foot.  
Wheels wooden of heavy artillery pattern, and fitted with 30x3½-inch Diamond Tires.  
Ignition by jump spark, automatically controlled.  
Sight feed oiling device on dash; 500 miles on one oiling.  
Beautiful in appearance and handsomely finished.



PRICE \$1750

**The Reid Mfg. Co., Detroit, Mich.**

New York Agents: HORACE B. DAY & CO., 60 W. 43d St., near 5th Ave.

# NEW STEAM SYSTEM BARTON STEAM GENERATOR



Works Automatic

KEROSENE  
BURNER

No Boiler or  
Burner Troubles

Special quotations  
to manufacturers.

Write for our cat-  
alogue of complete  
system.

KEROSENE  
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CONDENSERS.

## BARTON BOILER CO.

MANUFACTURERS OF

Full Line Flash Steam Appliances.  
4212 to 4230 State St., CHICAGO, U. S. A.

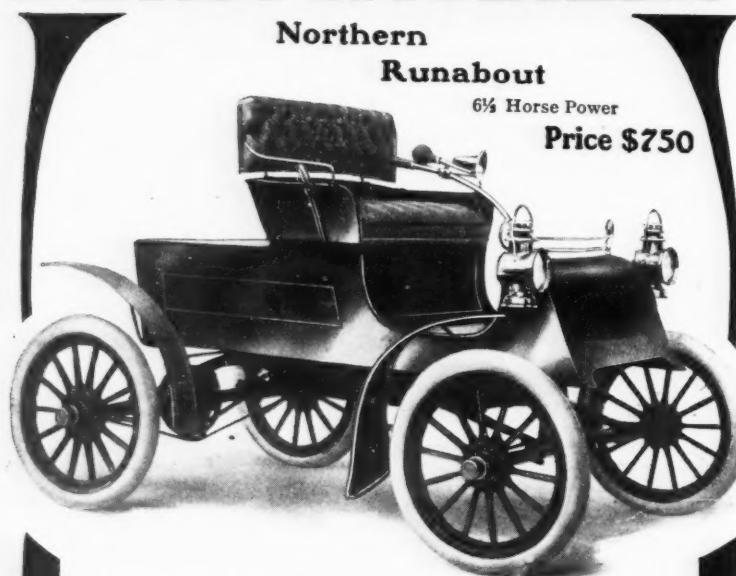
# NORTHERN AUTOMOBILES

**Northern**

**Runabout**

6½ Horse Power

Price \$750



**Pivotal Body Bearing** absorbs all vibrations from wheels and motor, while special safety device prevents the "back kick" of the motor.

**Extremely Heavy Running Gear** withstand any abuse on rough country roads; axles are guaranteed against breakage during the life of the machine.

**NORTHERN MANUFACTURING CO.**  
Detroit, Mich., U. S. A.  
Member National Association Licensed Automobile Manufacturers.

# APPERSON

**High  
Power**



## TOURING CARS

Our twenty-four horsepower, two-cylinder opposed motor located under bonnet is the most powerful two-cylinder motor used on any car made. Easily as accessible as any four-cylinder motor. A large, roomy car for either four or six passengers. Early delivery for those ordering promptly.

**The Best Car Built in America  
For the Average Man to Run**

Write for prices and deliveries

**Apperson Bros. Automobile Co., Kokomo, Indiana**

Licensed Under Selden Patent

**CHICAGO BRANCH: 394 Wabash Avenue**

## The Revelation

of the Chicago Show was

## The Hill Automatic Starter

For Gasoline Automobiles.

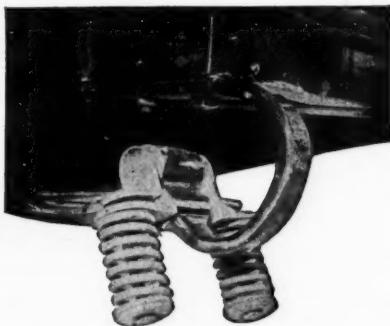
### The People Said:

"It always starts the motor, without using the hand crank."

Write us what car you use, and we will tell you all about it.

**The Steel Ball Company,**  
840 Austin Avenue  
Chicago, Ill.

# Would You? Would I?



Oakland, Cal., 27th Oct., 1903.

The Graham Co.,  
Park Sq. Auto Station,  
Boston, Mass.

Dear Sirs: I notice your "ad" of the GRAHAM Supplementary Spiral Springs, and as I am tired of paying for broken leaf springs for my touring car I will try your springs which you will ship to me by Wells-Fargo, C.O.D., with full instructions to apply the same.

Yours truly,

This is the regular thing by every mail.

**WOULD I?**

**THE GRAHAM CO.**

41 Columbus Ave., BOSTON, MASS., U. S. A.

**"Works Fine and Dandy"  
"Can Climb any Hill About Here"**

That's what Mr. J. H. Kindig of Huntington, Indiana, says February 18, on receiving his

# MICHIGAN RUNABOUT

Price now only \$475 complete

We expect such reports, because we get them.

Our booklet and statements from other users for the asking.

**MICHIGAN AUTOMOBILE CO., Ltd., Makers  
KALAMAZOO, MICH.**

*Let us tell more about the Elmore*

*WITH TONNEAU*



**\$850.00**

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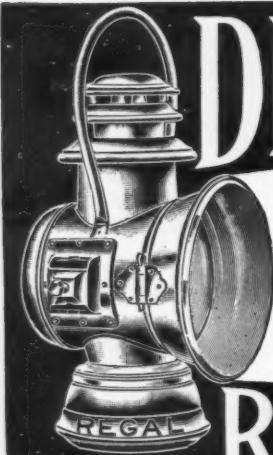
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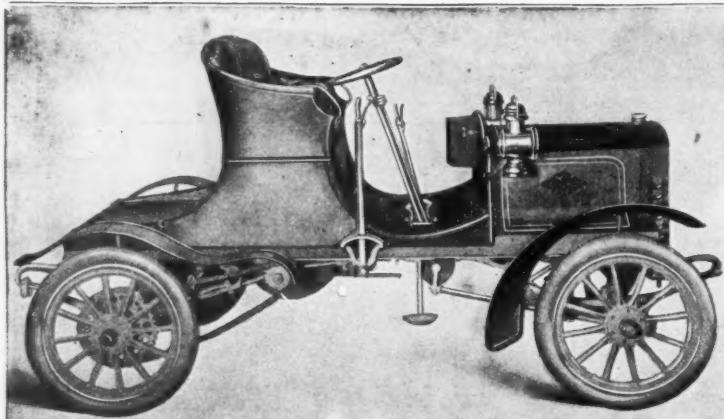
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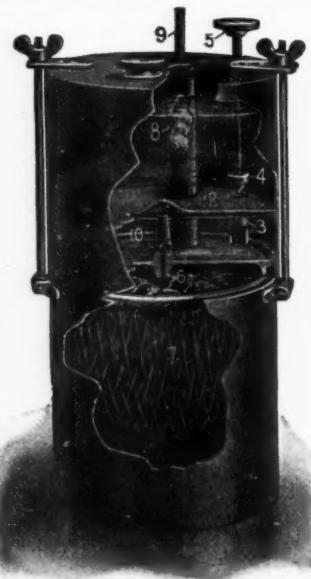


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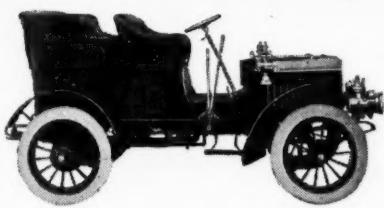
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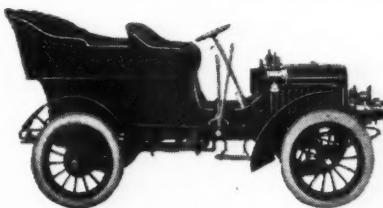


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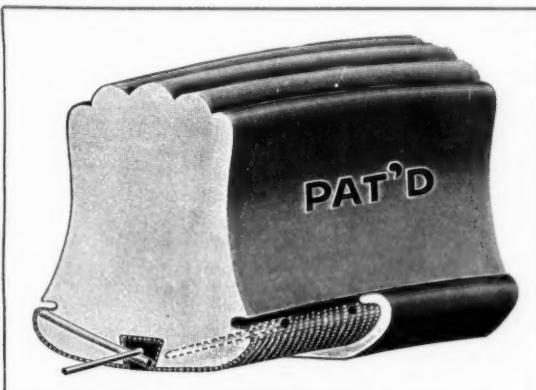


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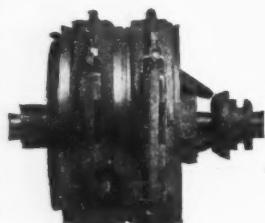
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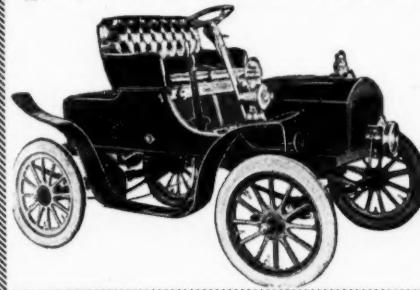
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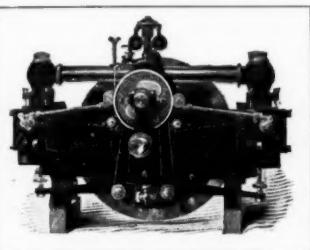
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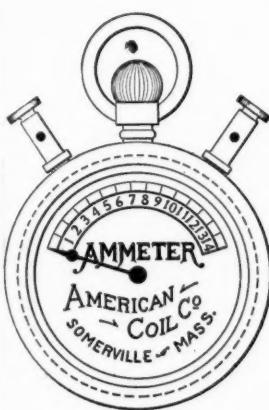
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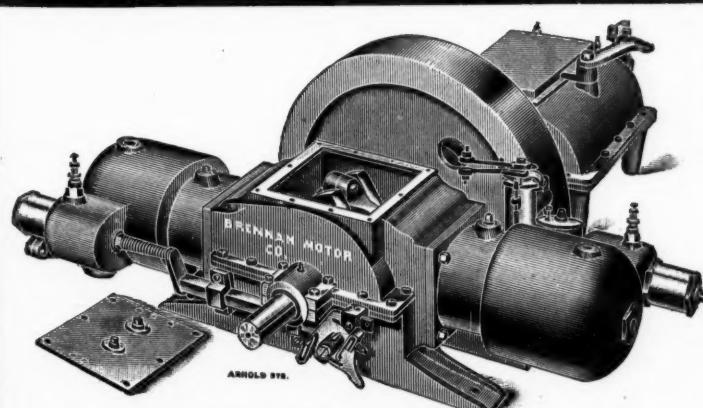
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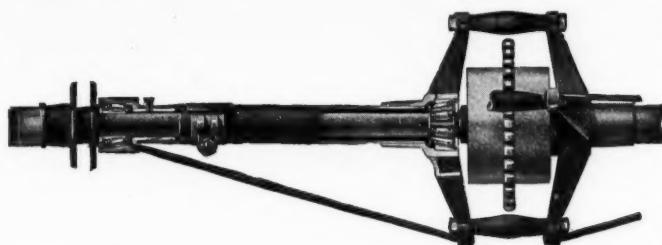
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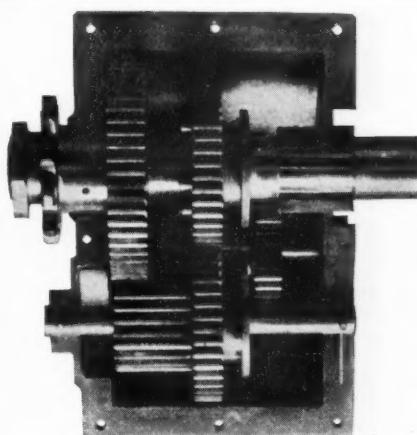
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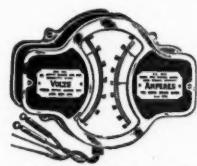


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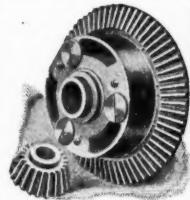
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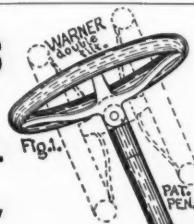
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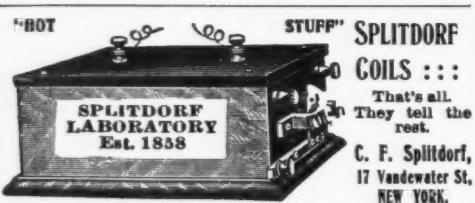
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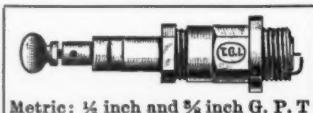
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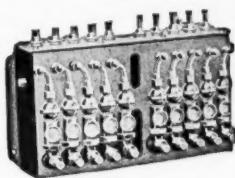
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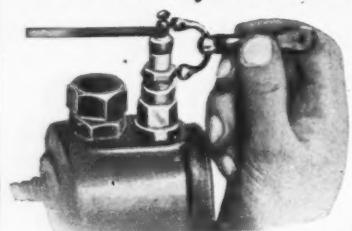
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FOR SALE—One 1903 Winton touring car, equal to new, \$1,675.00; 6 Oldsmobiles, \$350 to \$525; one Orient buckboard, run 200 miles, \$250; one practically new steam outfit, \$100. Write for particulars. Earl Fisher, 328 E. Market St., Indianapolis, Ind.

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FOR SALE—One new Fordmobile tonneau, \$700; one Model 7 Elmore, used 300 miles, \$490; one 1904 Michigan, new, \$360; one Rambler, second hand, fine condition, \$350; one 1904 Buckboard, new, \$375; one 1904 Buckboard, used 50 miles, \$360; one 1903 General, used 100 miles, improved and none better, \$750; one 2½ H.P. Thomas motor cycle, \$75. Address Auto, care Motor Age.

SPLENDID BARGAINS—1903 Winton touring car, 1903 Waterless Knox, 1902 Knox, 1902 Winton Phaeton, several Oldsmobiles and steam runabouts; two second hand electric runabouts. Write us fully regarding your wants, and we will try to give you an interesting proposition. Adams & Hart, Grand Rapids, Mich.

WANTED—Late model gasoline motors; good repair. A. L. Gould, Dealer, Mobile, Ala.

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AUTOMOBILES AT YOUR PRICES—1903 Wintons, lamps, baskets, etc., \$1,400; 1902 Wintons, canopy top, glass front, \$800; 1901 Winton semi-racer, 15 H.P., wheel steering, \$400; 1903 Pierce Stanhope, with front seat, \$875; Locomobile Runabouts, \$200 and up; Locomobile Dos-a-Dos, \$400; surreys, \$600; delivery wagons, \$800 to \$1,000. R. W. Whipple, Binghamton, N.Y.

FOR SALE—"Toledo" Steamer, model "B," with full leather top and curtains. Engine, boiler and tires in perfect condition. As good as new. Price \$250. Address Subscriber, care Motor Age.

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FOR SALE—Improved White touring car, practically new and in excellent condition. Careful inspection invited. This is a bargain, owner leaving state. Address Box 263, Union City, Mich.

FOR SALE—A White Stanhope, in excellent condition; recently refinished; for physician's or business use. The White Garage, 215 W. 48th St., N.Y.C.

FOR SALE—\$1,100.00 new Knox runabout, model 1904, now at Rock Island, Ill. Address "F." room 198, War Department, Washington, D.C.

FOR SALE—Having discontinued the building of complete automobiles, we have for sale cheap a lot of bodies, axles, engine castings, etc. Send for list. Russell Mfg. Co., Indianapolis, Ind.

FOR SALE—Second hand steam, gasoline and electric automobiles. The largest variety under one roof in America. Send 5c in stamps for catalogue. Mississippi Valley Automobile Co., 3935-39 Olive St., St. Louis, Mo.

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WANTED—To hear from parties who would be interested in the development and manufacture of a hydro-carbon engine as described in the issue of February 25, 1904. L. J. Goodrich, care of Motor Age.

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